

THE IRON AGE

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THE IRON AGE

New York, Thursday, December 31, 1908.

The Lodge & Shipley Heavy Axle Lathe.

An extra heavy pattern axle lathe, with an extremely powerful drive, rigid construction, and designed with special reference to convenience in the execution of the work for which it is intended, is a new product of the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio. Fig. 1 shows one of these lathes with a crane for handling the work when putting it in or out of the lathe.

The bed is of very massive construction, with cross

carried in bushed positive ring oiled bearings. All gears are of steel. The driving shaft is of large diameter and held in alignment by a number of journal blocks bolted to the bed. There is no overhang on the pinion of the main driving gear; the shaft is supported on either side of it in long bearings. The large gear meshing with this pinion is placed in the center of the driving head, and as with the pinion, has a double bearing. A powerful compensating driver is secured to the gear in the head, the dogs of which are faced with steel plates. Fig. 2 shows the gears of the drive and feed gears.

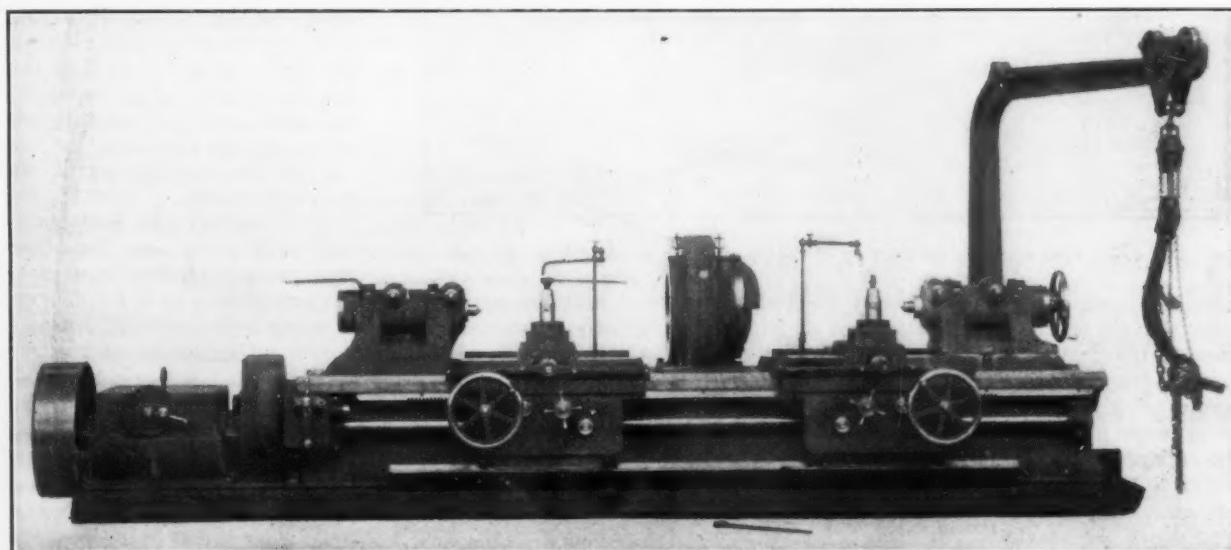


Fig. 1.—The New Axle Lathe with Crane, Built by the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio.

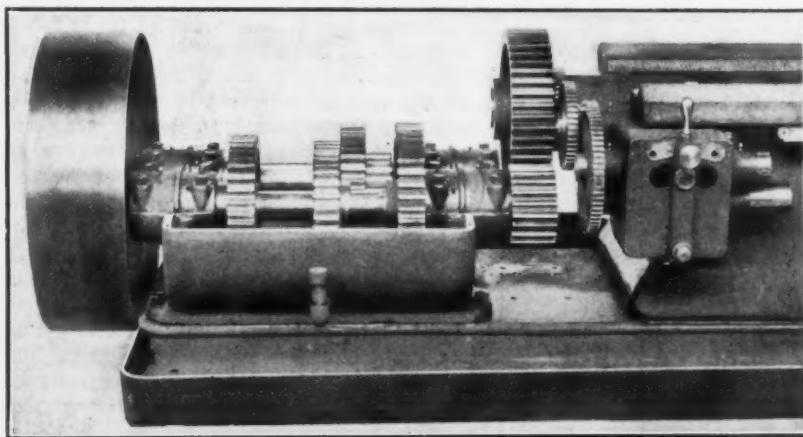


Fig. 2.—The Gears of the Drive and the Feed Gears.

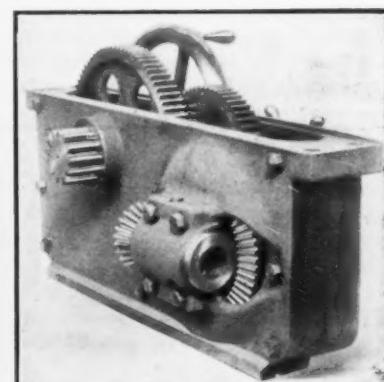


Fig. 3.—The Double or Box Apron.

braces of box section. A longitudinal member of box section is cast in the center of the bed, extending its length parallel to the outer walls, and further stiffens the cross braces. The walls of the bed are thick, and the metal dovetails on the upper and lower edges are as nearly equal in cross section as possible. The ends of the bed are cut away to facilitate removing the tailstock, or permit of a reasonable overhang for unusual length. In addition to the front and rear V's, with the inner flat tracks, an additional 45-degree plain surface has been machined upon the bed to accommodate the bearing of the carriage on the bed.

For simplicity in design and ability to deliver power for taking a heavy cut, the drive on this lathe is particularly noteworthy. Power is applied to a constant speed pulley of large diameter and wide face, running at a high velocity. Variation in speed is obtained by sliding gears, which run in a bath of oil. All shafts are

All of the feed gears are of steel. The splined feed rod is driven by a gear train from the main shaft. Through a change gear box three feeds are obtained, which may be changed while the lathe is in operation.

Particular attention is directed to the compact box construction of the apron, Fig. 3, which is tongued and grooved to the carriage. All of its gears are steel. In addition to being clamped to the carriage, the apron is further supported by a third V cast in the bed, and in such position as to be directly under the apron, as shown in Fig. 4. The purpose of this construction is to support the apron at the bottom for both vertical and transverse stress. The spring of the apron due to the thrust from the rack pinion is thus effectively overcome.

The carriage in addition to the bearing on the V's on the front and rear shears of the bed, also has a flat bearing or track on the inside of the front shear. A further angular bearing of 45 degrees tends to secure a perma-

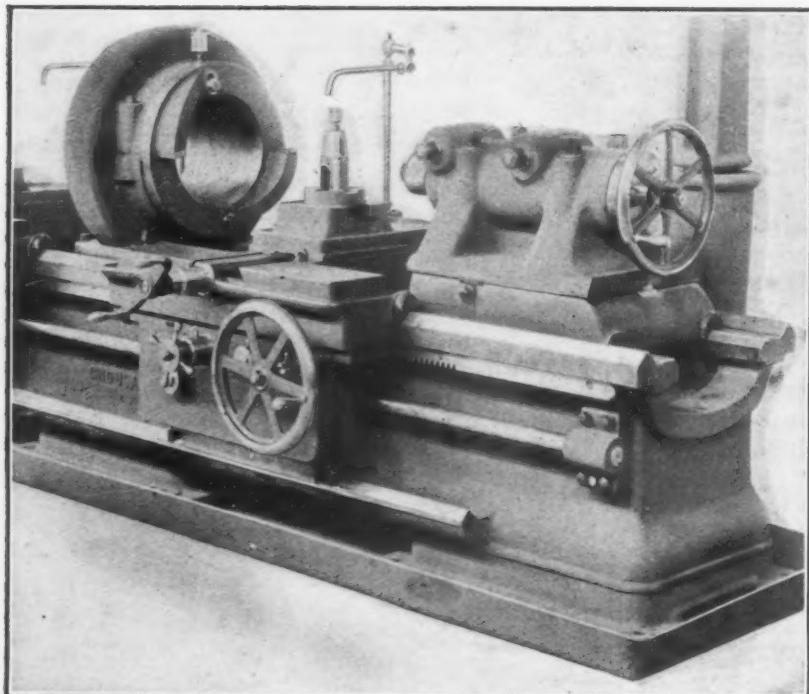


Fig. 4.—A View Showing the Bearing of the Apron Upon a Third V on the Bed.

nent alignment of the carriage with the bed. The carriage bearing on the bed is considered of importance in view of the great thrust from the burnisher as well as from heavy cutting. The end view of the lathe, Fig. 5, shows quite clearly the ample carriage bearing. Water troughs are provided around the tool slide and wings of the carriage. The tool posts are arranged with hardened toothed plates interlocking with the tool and effectively preventing any possibility of the tool swiveling or slipping under the heaviest cuts. The tool slide is of steel.

The tailstocks are massive and are firmly bolted to the bed. The clamps are brought to the top of the spindle barrel. A pawl, engaging with a rack cast in the bed, is attached to each tailstock, this design tending to relieve the strain on the clamping bolts and overcome the thrust of heavy cutting, when blunt cutting tool angles are used. The tailstock at the driving end has a stationary spindle with no transverse adjustment, the necessary

adjustment being obtained from the spindle of the second tailstock, which is also provided with a transverse adjustment. The plug clamps for binding the tail spindles are of improved design, two instead of one for each tailstock, and are placed at the top of the spindle barrel, as shown in Fig. 6.

The workmanship and material are of the highest class. The flat bearing surfaces are carefully scraped to fit. Ample provision is made for delivering an adequate supply of water to the tools, all journals being copiously supplied with oil by means of positive automatic oil rings.

The Glamorgan Pipe & Foundry Company Changes Control.

Leading business men of Lynchburg have purchased from M. J. Drummond and David McClure of New York a controlling interest in the Glamorgan Pipe & Foundry Company, which has a large cast iron pipe plant at Lynchburg, Va. While the control of the property will be in the hands of the Lynchburg capitalists, M. J. Drummond and David McClure, who own all of the \$200,000 of nonvoting preferred stock, will continue to be interested in the business. M. J. Drummond & Co., New York, will continue as sales agents for the Glamorgan products and will assist the new management in every way possible in the operation of the plant. In the last six years a large sum of money was spent in enlarging the plant to double the capacity, and it is not the purpose of the new management to make any extensive improvements in the near future. The new Board of Directors is composed of John W. Craddock, O. B. Barker, R. D. Apperson, N. D. Eller, Walker Pettyjohn and G. E. Vaughan of Lynchburg; J. I. Pritchett of Danville; Arthur J. McClure and M. J. Drummond of New York; John D. Horsley and A. M. Campbell, the last three having been on the old board. The four members of the old board who resigned were John McClure, David McClure, A. H. Mellert and Walter J. Drummond, all of New York. Walker Pettyjohn is president and A. M. Campbell, who for many years has been secretary of the company, is now vice-president and general manager. The offices of secretary and treasurer, the latter position having been filled by J. M. Frazier, New York, have been united and Harry L. Campbell, who has for some time been secretary-treasurer of the Lynchburg Cotton Mill Company, has been elected secretary and treasurer. The Executive Committee consists of John W. Craddock, O. B. Barker and N. D. Eller.

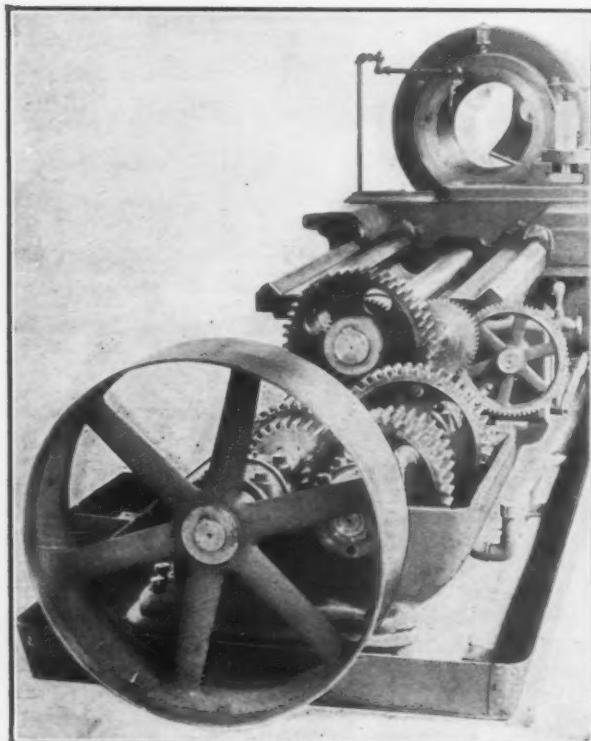


Fig. 5.—An End View, Showing the Drive and the Carriage Bearing on the Bed.

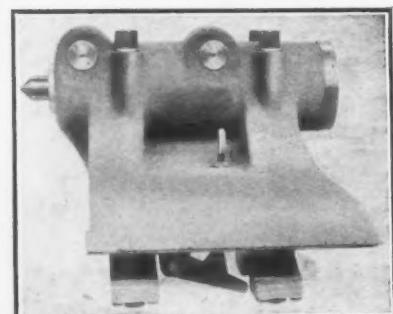


Fig. 6.—The Tailstock, Showing the Means for Clamping to the Bed and the Thrust Plugs for Locking the Spindle.

The workmanship and material are of the highest class. The flat bearing surfaces are carefully scraped to fit. Ample provision is made for delivering an adequate supply of water to the tools, all journals being copiously supplied with oil by means of positive automatic oil rings.

More Gayley Dry Blast Installations.

The Hamilton Steel & Iron Company, Ltd., Hamilton, Canada, has taken a license to use the Gayley dry blast at its two blast furnaces, and the construction of the refrigerating plant will be undertaken at once. The dry blast apparatus will be built under the designs and supervision of Frank C. Roberts & Co., Philadelphia. The same engineers have in charge the design and construction of the dry blast plant for the Pioneer Iron Company, at its Marquette furnace.

Two Special Hoefer Machines.

During the past dull season a number of special machines have been designed and built by the Hoefer Mfg. Company, Freeport, Ill., particularly for its own use in the building of drill presses and power metal saws. Two of these are herewith illustrated.

In Fig. 1 is shown a splining machine for milling the spline in drill press spindles. It is extremely rapid and entirely automatic, so that no attention need be paid to the machine, except to change spindles when work is completed. The heads are well ribbed and solidly constructed to give rigidity and are gibbed to a carefully planed bed, which insures accuracy of the spline. The cutters are held in a simple and easily operated draw-in chuck. The heads are connected through a shaft, which has a right and left hand screw at either end. On this shaft are two frictions by means of which, after loosening two cap screws, the heads can be independently adjusted. This shaft carries a hand wheel which permits of a rapid setting of either head and also rapid return for both cutters.

The shaft or spindle to be splined is placed on a standard Morse taper plug, firmly held in a plunger by a screw collar which also gives a vertical adjustment to the spindle. The spindle is further made firm and solid by the standards and collars which hold it upon the taper plug. This plunger has connecting rods attached to an adjustable crank pin, so that drift holes of various lengths can be made. The crank plate carrying the adjustable crank pin is operated by a shaft which receives its drive through a worm wheel and a worm on a horizontal shaft belt driven from the left hand head. As the bearing in which the plunger works is very long and as the fish tail cutters are accurately located at the center of the plunger, very satisfactory and accurate drift holes are obtained. The bed carries an oil tank, also an oil pump which keeps a steady stream of oil on each cutter.

The spindle is slowly moved up and down by the plunger, and at the end of each stroke the heads are automatically fed in the desired amount. This feed mechanism consists of a ratchet which is engaged by a pawl actuated through a lever, the roller of which bears on a cam attached to the rear of the worm wheel before mentioned. The feed mechanism is so arranged that the roller can be lifted from the cam by the handle A, or

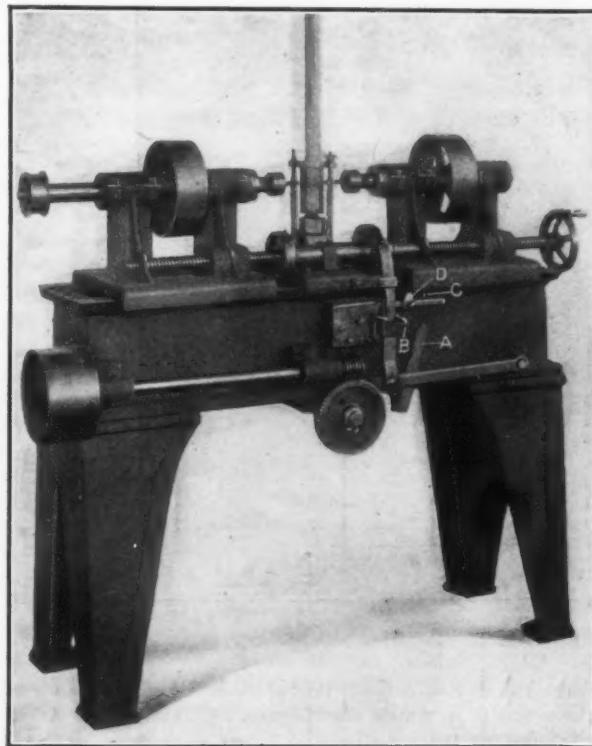


Fig. 1.—A Machine for Splining Drill Press Spindles. Built and Used by the Hoefer Mfg. Company, Freeport, Ill.

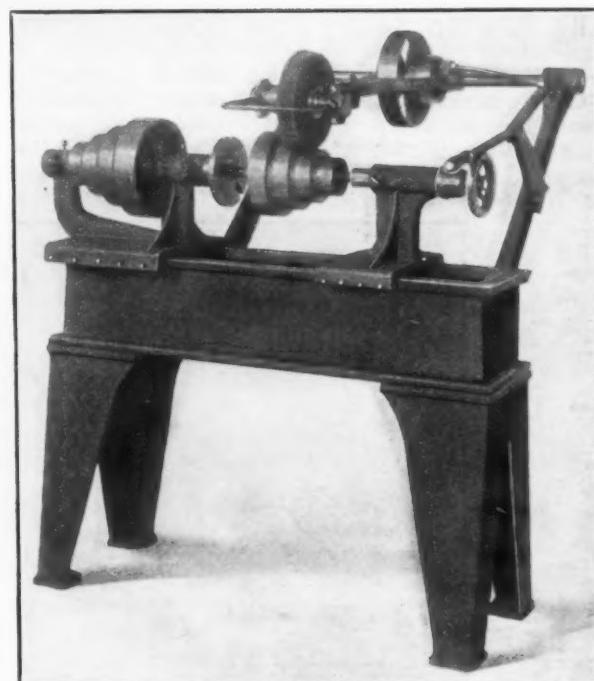


Fig. 2.—The Hoefer Pulley Polishing Machine.

the pawl removed from engaging the ratchet by the handle B. As the heads are fed toward one another the pin C comes in contact with the adjustable stop D and throws out the automatic feed. When this occurs a thin section still remains separating the two cutters. To remove it the two feed screws on the shaft can be disengaged from each other and one head alone fed downward.

In Fig. 2 is shown a polishing machine which has done away with the old and troublesome process of polishing cone and driving pulleys, and substituted a rapid and simple means of attaining excellent results on this class of work. The illustration is almost self-explanatory of the operation. The arm which carries the polishing wheel is counterbalanced to make its operation easy. It has a swivel joint so that the wheel can be swung in a vertical plane about the axis of the arm. Two pulleys are fastened together and rotate on a stationary sleeve, forced into the forked arm. The arm is capable of a sliding motion on its shaft, which motion is obtained through the lever at the right within easy reach of the operator. To avoid spending time in putting the pulleys to be polished on an arbor, a conical plug is used instead of the usual lathe center and gives directly a proper centering of the pulley. Each plug will accommodate two or three different diameters of pulley holes. To drive the pulley a dog is placed on the face plate and engages one of the pulley spokes. In the tailstock an auxiliary conical bushing revolving on the regular center gives the proper bearing for the rear end of the pulley. The polishing wheel has a bevel so as to reach the corners of the pulleys. The remarkably short time which it takes to polish pulleys as compared with the old method makes this tool a valuable addition to the company's line of labor saving machines.

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The Harbison-Walker Refractories Company, Farmers' Bank Building, Pittsburgh, has broken ground at Birmingham, Ala., for the erection of a firebrick plant to have a capacity of 40,000 brick per day. It will be patterned after the company's plants in the Pittsburgh District, and is being built to take care of Southern trade. The plans provide for the construction of reinforced concrete buildings of modern design, which, with the equipment, will cost approximately \$250,000. The company has heretofore been shipping brick to the Southern markets from its plants in the Pittsburgh District, and the increased business originating in the South and high freight rates resulted in the decision to build a plant in Alabama.

The Newton Heavy Four-Spindle Miller.

The size and work producing capacity of the four spindle milling machine recently furnished the Pennsylvania Railroad Company for its Altoona shops by the Newton Machine Tool Works, Philadelphia, Pa., are impressive. The table of this machine is 42 in. wide and

spindles is 32 in. The two side heads and the right hand head on the rail are of the same general design. The spindles are $5\frac{1}{8}$ in. in diameter, have a brass bushed bearing 17 in. long, and have a double taper bearing in the mouth of the adjusting sleeve $8\frac{1}{4}$ in. long. The ends of the spindles have an external thread on which face cutters can be fitted and No. 5 taper sockets into which

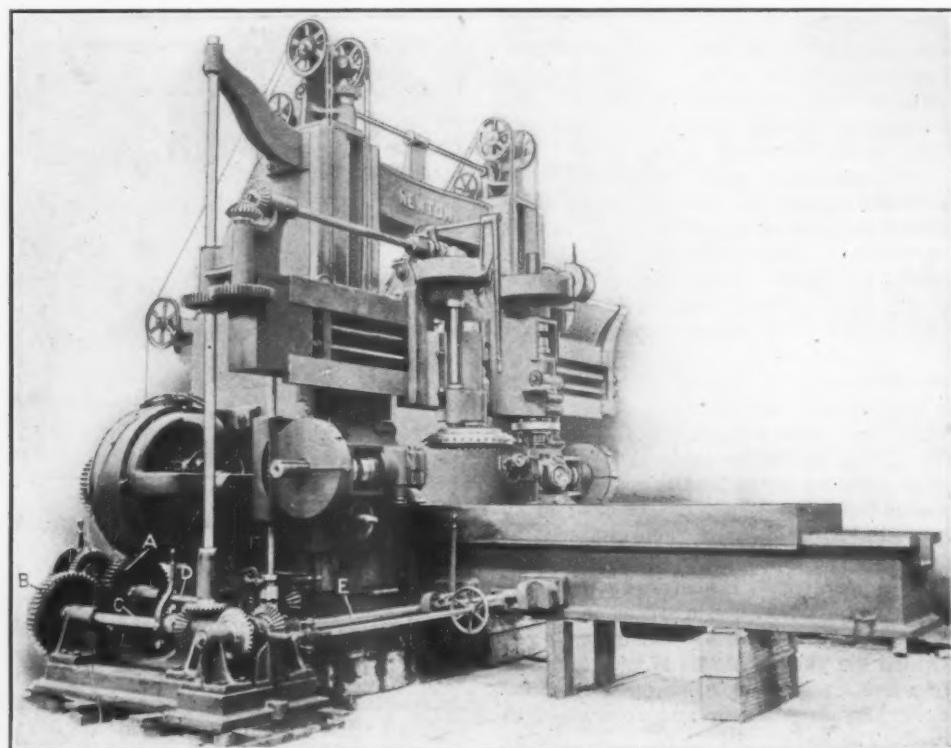


Fig. 1.—A Heavy Four-Spindle Milling Machine Built by the Newton Machine Tool Works for the Pennsylvania Railroad.

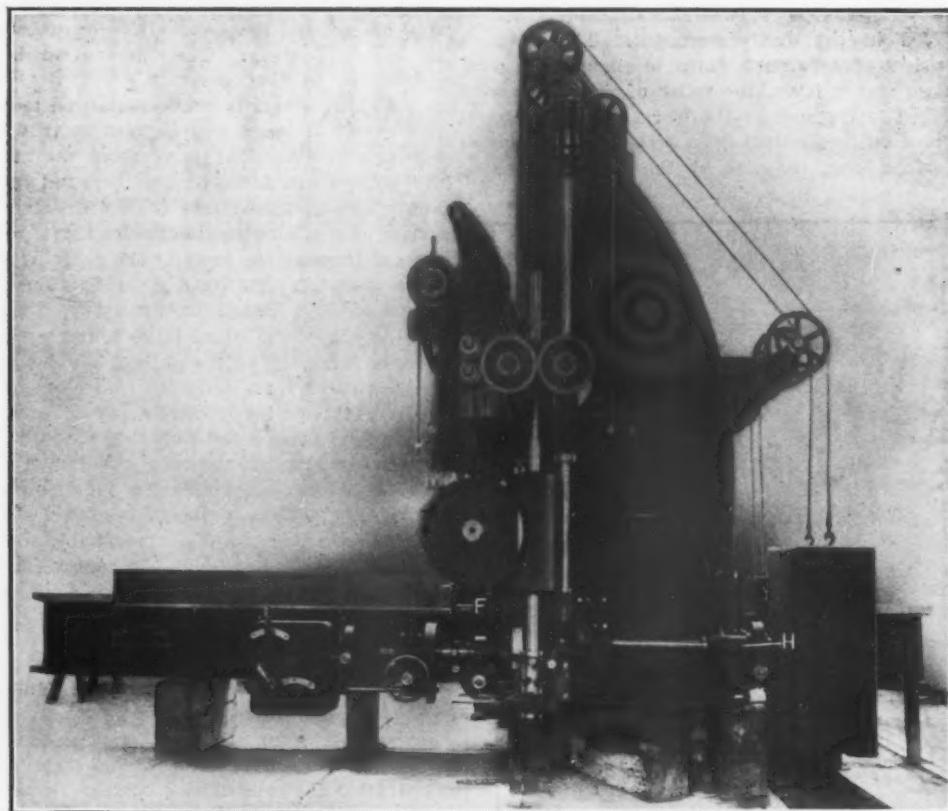


Fig. 2.—A View of the Newton Miller from the Operating Side.

18 ft. long overall, and work to a length of 16 ft. can be milled. The maximum distance between the ends of the horizontal spindles is 60 in., and the minimum distance is 36 in. The maximum distance between the end of the vertical spindles and the top of the work table is 66 in., and the minimum distance between the centers of the

end mills can be fitted. There are holes entirely through the spindles in which are inserted retaining bolts. Across the ends of the spindles are broad slots to hold rigidly the large diameter face cutters frequently used on this machine.

The drive of the spindles is through steep lead sleeve

bronze worm wheels approximately $26\frac{1}{2}$ in. diameter and hardened steel worms having roller thrust bearings; both of these are encased and continually run in oil. The rack sleeve is of sufficient length to permit of an independent adjustment to the spindle on the saddle of 12 in. by means of the adjusting worms and worm wheel shown, operated by squared crank holds. The left saddle on the cross rail carries an auxiliary slide in which is mounted a spindle carrying a solid cast steel rotary planing head 26 in. diameter over the cutters. This cutter head is driven through a steep lead bronze worm wheel and hardened steel worm of similar design to those on the other heads by a pinion shaft meshing with the internal head gear.

The cross rail and the side heads are counter weighted. The cross rail slides are provided with forked lugs on the bottom, so that the side heads can be attached to them by swinging bolts and elevated with the rail by power.

the rail. The drive of the left-hand rotary planer head is controlled through a clutch operated by the lever I, Fig. 3. As shown in the latter illustration, the right vertical spindle is arranged to be driven direct or through back gears.

There are available table feeds at the high speed of the motor from 0.789 to 8.15 in. per minute, and at the slow speed of the motor feeds of from 0.394 to 4.08 in. per minute, and quick return in both directions at the rate of 21.94 ft. per minute. The maximum feed to the rail vertically and the saddles on the rail is $4\frac{1}{2}$ in. per minute, with the motor running at 1120 rev. per min.

A World Wide Shrinkage in Trade.

The United States, says the Bureau of Statistics, is not alone in the record of smaller imports and smaller exports which will characterize the history of our foreign commerce in the year about to end. Of the 25 principal

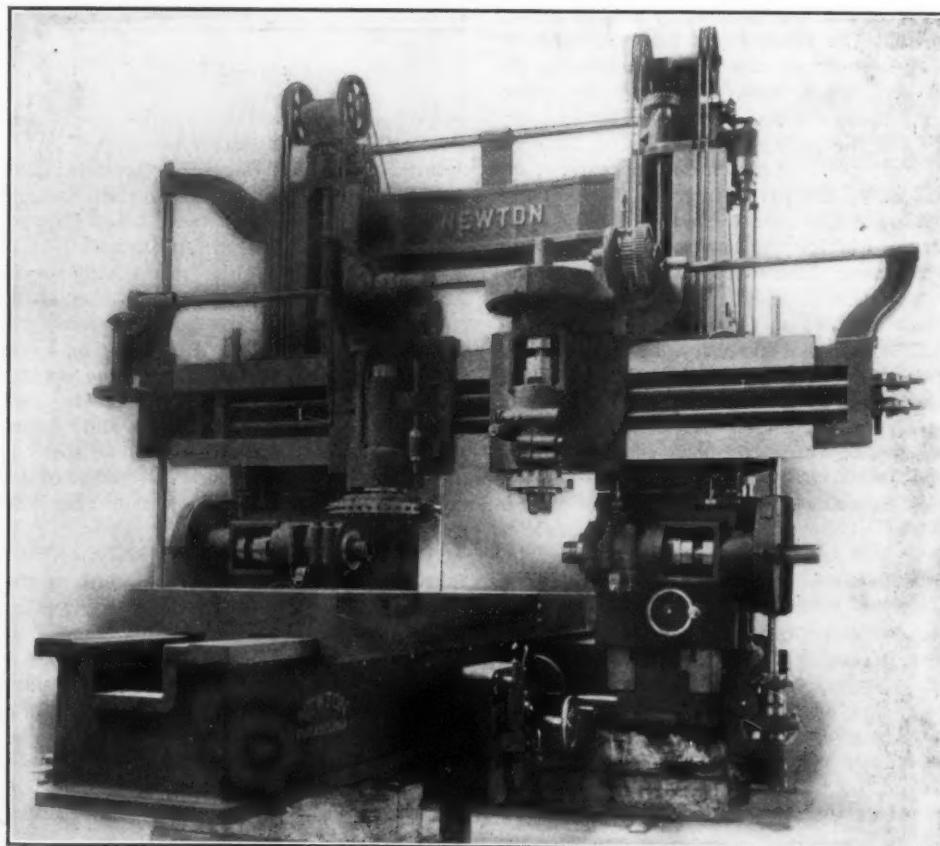


Fig. 3.—Three-Quarter Front View of the Newton Miller.

The elevating screws have roller thrust top and bottom bearings on the rail, permitting of maintaining a tension on the screws when pulling the cutters to the work. The drive is from a 50-hp. General Electric motor running at 560 to 1120 rev. per min., and is transmitted through an idler rawhide pinion and the idler gear A, Fig. 1, to the gear B, which is fitted to the shaft C. From the latter the two vertical heads obtain their drive, feed and fast traverse. To the hub of the idler pinion A, a smaller pinion is fitted meshing with a pull pin gear and back gear which drive the shaft D, and through it operate the two side heads. Motion for the fast traverse and feeds is transmitted through the shaft E to the working side of the machine, as illustrated in Fig. 2. This view shows the feedbox, which is of the maker's standard design, and gives nine changes of feed. The feed and fast traverse are obtained from the horizontal feed shaft operated by the clutch F. Power is taken from this horizontal feed shaft at H for elevating the rail and adjusting the heads on the cross rail. Clutches in the transmission make possible individual or simultaneous driving of the heads and feeds, and fast traverse for the table, the cross rail and the cross adjustment of the heads on

countries of the world, all but four show a falling off in exports and nearly two-thirds show a falling off in imports. The countries are Argentina, Australia, Austria-Hungary, Belgium, Brazil, Canada, Chile, China, Cuba, Egypt, France, Germany, Italy, Japan, Mexico, Netherlands, Norway, Russia, Spain, Sweden, Switzerland, the United Kingdom, the United States and a number of smaller countries. In all except China, Chile and the Netherlands, the figures of certain months of the year 1908 are now available.

In every country for which 1908 figures are available, with the exceptions of Argentina, Spain, Greece and Sweden, the exports of 1908 fall below those of 1907, while in practically two-thirds of the cases the imports of 1908 also fall below those for a corresponding period of 1907. Taking the full list of countries in question, but omitting the United States, the average monthly importation of the more than a score of principal countries thus included has fallen from \$935,000,000 in 1907 to \$885,000,000 in 1908, and the average monthly exportation has fallen from \$804,000,000 in 1907 to \$739,000,000 in 1908. Part of this shrinkage is of course due to lower prices.

The Whitcomb-Blaisdell Cushion Clutch Geared Head Lathe.

The Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass., has brought out a new single pulley drive all-gear friction head engine lathe, designed for a wide range of usefulness up to heavy duty with high speed steels. Fig. 1 shows the 16-in. size of this lathe, Fig. 2 a detail of its head and Fig. 3 an end view. The machine possesses several novel features. In securing the eight changes of speed in the head a new form of clutch is employed, which combines the action of the friction type with a positive engagement, and which automatically adjusts itself to the load. The head feed and gear box give 32 changes of thread pitch and feed without the use of change gears. A double key device is used in securing the changes in the feed box. A thread indicator on the carriage enables the operator accurately to catch the thread while screw cutting. A new principle in lathe design is embodied in the tailstock, which is held to the bed by compound lever action controlled by a hand wheel. By this arrangement the tailstock is loosened quickly, permitting it to slide easily on the ways in adjusting its position to lengths of work, while a turn of the wheel again clamps it rigidly to the bed.

The drive is from the pulley shaft *a*, Fig. 4, through four gears, *b*, to corresponding clutch driven gears, *c*, on the shaft *d*, from which the power is transmitted to the lathe spindle *e* through the gear train *f f'* for the high series and the train *g g'* for the low series, thus giving the eight speed changes. There are six clutches in the head, all of the same general design, but differing slightly in detail. The four clutches on the shaft *d* engaging the several speeds of the series are identical in construction, while the same is true of the two on the shaft *e*, except that the low speed clutch at the right is somewhat larger than that of the high speed series, seen at the left, and has two cam pins instead of one to insure prompt engagement.

The low series clutch, Fig. 4, consists of the case *h* keyed to the spindle within which is the friction ring *i*, carried by the gear *g* through the pin *e* and operated by the lever *j*. The cam pin *k*, which slides through a hole in the friction casing *h*, keyed to the spindle, when brought into engagement, presents an obstacle in the path of the lever *j*, causing it to rise and expand the friction ring with whatever force may be required by the load against the casing *h*. The principle of the wedge as well as that of the lever is involved. In other words, the clutch automatically adjusts itself to the power required to be transmitted. The action is the same when the lathe is reversed to back out taps or for other similar

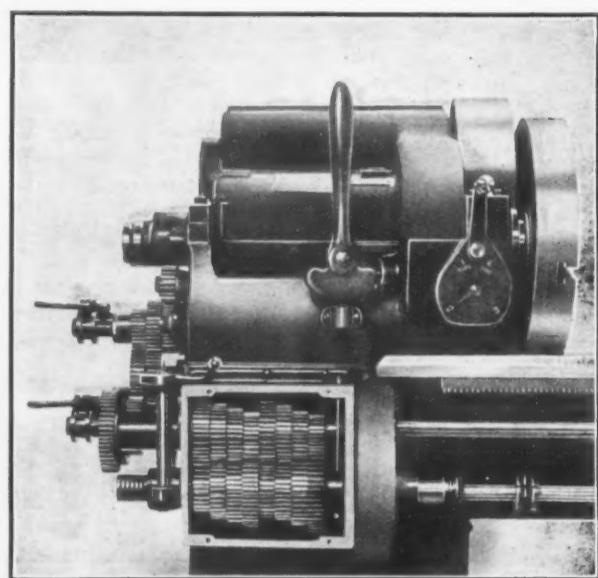


Fig. 2.—A Detail of the Head.

purposes, the pin striking against the opposite end of the lever. The other form of the clutch is the same in its details, except that the cam is a block instead of a pin.

The means of operating the frictions constitute an interesting mechanism. Those on the lathe spindle, giving the two series of speeds, are controlled by a lever handle seen at the center of the head of the machine. In Figs. 1 and 2 it is shown in its intermediate position, both clutches being disengaged and the spindle idle. In Fig. 4 the clutch is seen engaged for the low speed series. The hub of the lever is fastened to the crank *m* by a stud passing through the headstock. The crank carries a bronze block *n*, which engages a sliding member *o* carrying the two cam pins *k* for the low speed and the single pin *k'* for the high speed. Two pins are used in the low speed clutch because its friction ring always revolves slowly.

In operating the clutches on shaft *d*, effecting the four changes of the series, the crank at the right of the front of the head is used. Beneath the crank is a pointer which indicates the lever position for the several speeds. The crank is always in an upright position when a clutch is engaged. Through a pair of spur gears and shaft at the rear of the indicator shield (they do not appear in the drawing) the motion is transmitted to the rear of the headstock through a second pair of spur gears, the upper of which is seen at *p* keyed to the shaft *q*, on which is cut the pinion *r*. This pinion engages a rack on the shaft

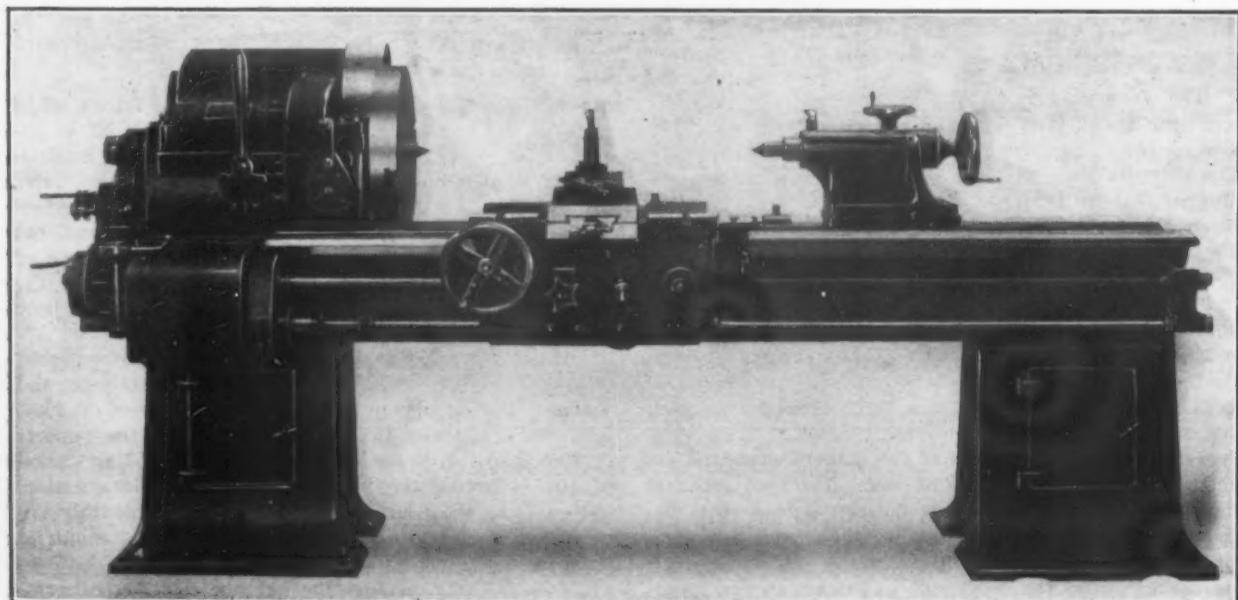


Fig. 1.—The Geared Head Friction Drive 16-In. Engine Lathe Built by the Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass.

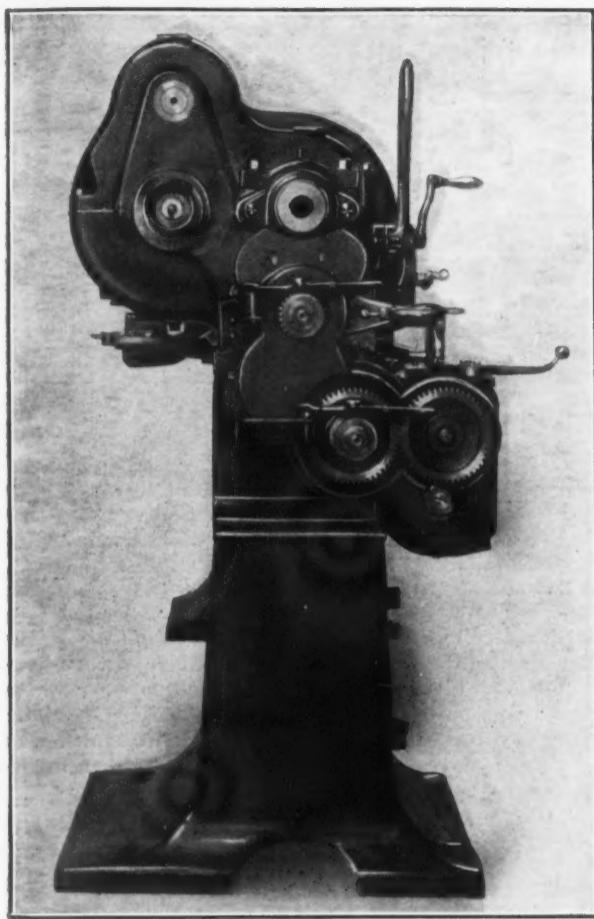


Fig. 3.—A Head End View of the Lathe.

s which slides within shaft *d*. On the opposite end of this interior shaft is a connection to the sliding, keylike piece *t*, to which are fastened the cam blocks *u*. Thus the movement of the lever handle in its revolution engages the blocks with their respective gear clutch levers one after another.

The end feed mechanism possesses features of novelty in the manner in which the use of change gears is eliminated except for special thread pitches. All changes are effected by the combination of the positions of two levers, each controlling two gears, thus quadrupling the eight changes of the feed box, making available 32 feeds or pitches without change of gearing.

Power is transmitted to the feed works from a gear on the lathe spindle *e*, Fig. 5, to the pinion *v* on the shaft *w*. Loose on this shaft are the gears *x* and *y* operated by the sliding key *z* controlled by a lever connected with the spool. Meshing *x* and *y* and mounted on a sleeve on the stud *A* are the gears *B* and *C*, and on the end of the sleeve is the pinion *D* meshing gear *E* on the shaft *F*. On this shaft is the gear *G* meshing gear *C*. The pinion *E* and the gear *G* are mounted loose and are engaged by a sliding key in the same manner as on the shaft *w*. The gear *H* on the shaft *F* meshes gear *I* on the shaft *J* at the top of the feed box. Thus with the two positions of each of the two handles controlling the sliding keys a compound gear effect is transmitted to the shaft *J*, giving four feeds for each of the eight changes in the feed box. The gears *H* and *I* are arranged to be removed for the substitution of such others as may be required to obtain such universal thread pitches as are not in the regular range.

The feed box is of the standard Whitcomb-Blaisdell type. The shaft *K* is milled out to take the double key *L*, which arrangement shortens the motion of the sliding shaft. The two keys are so spaced that when one is engaged the other must be opposite one of the separating rings. The interlocking feature causes the engaged key to hold the other out of contact with the ring, preventing wear. The spring serves to engage the one key when the other is withdrawn from engagement, but when the keys are locked the spring becomes inoperative. The shaft carrying the keys is moved by the hand wheel, which is cut away at its center to permit of the reading of the dial number. Bringing any number into view sets the gearing for that thread.

The lathe is furnished with an entirely new patent tailstock, in which a hand wheel either locks the stock to the bed or releases it so that it may easily be moved backward or forward on the ways. The details of this construction are shown in Fig. 6. The principle of the compound lever is employed. The screw *M*, operated by a hand wheel, presses down upon a steel plate in the lever *N*. The fulcrum is at *O*. When the screw is

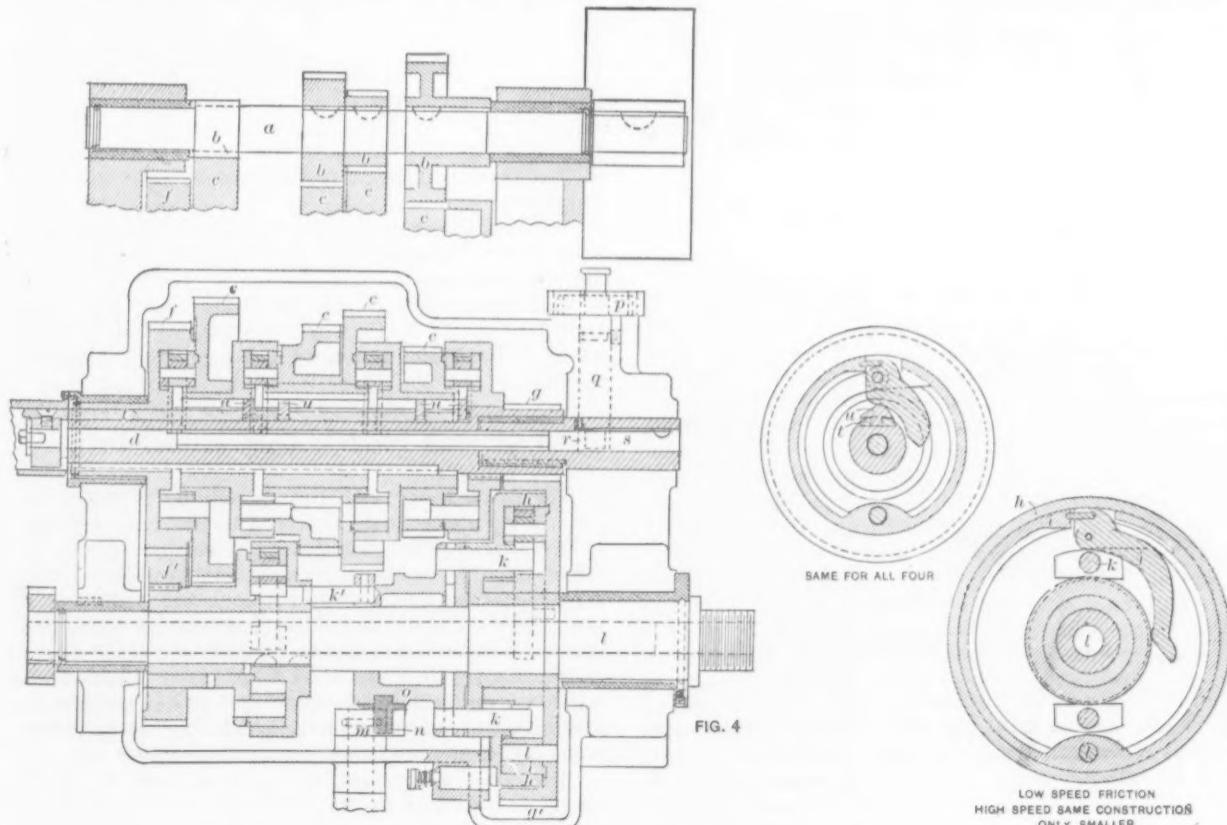


Fig. 4.—Details of the Head and Clutch Mechanism.

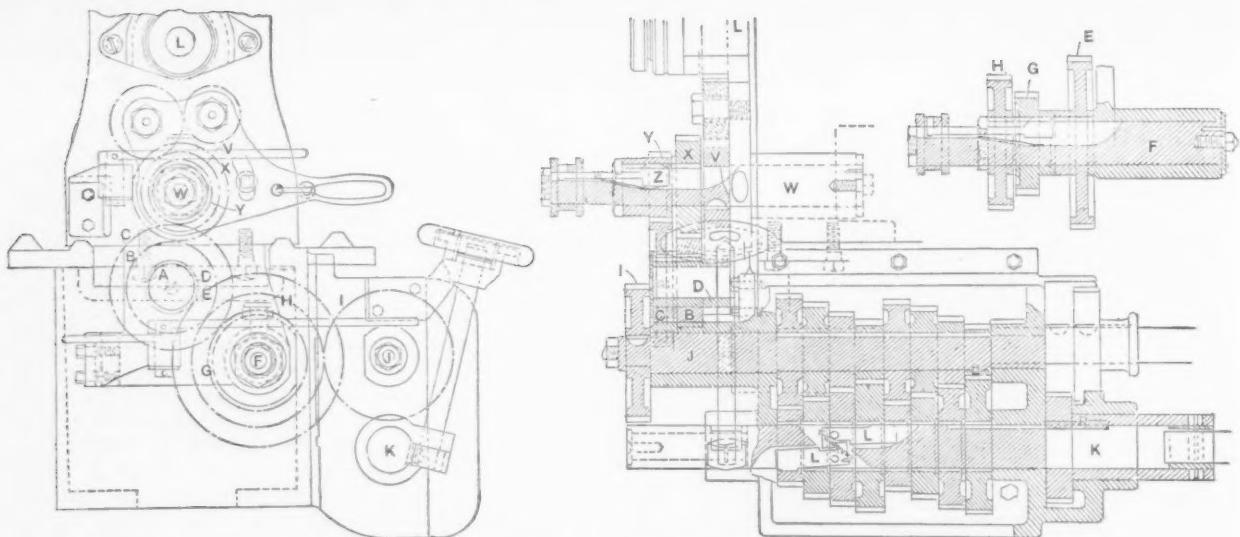


Fig. 5.—Details of the Driving End and Feed Box.

lowered the pressure is transmitted to and further multiplied by the interlocking levels P, each fulcrumed on two nuts, this action causing the lip Q at each of the four corners of the tailstock to bind to the bed, giving a very rigid hold. The loosening process, consisting of a

pitches and in four positions for one-half pitch. If the dial is set so that the pointer is against one of the marks of the dial corresponding to the pitch to be cut, the thread may be caught on the next cut when the pointer is at any corresponding mark of the dial, which may be a great convenience in thread cutting. The transmis-

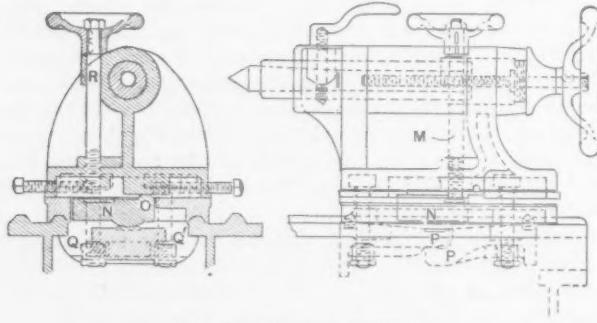


Fig. 6.—The New Tailstock.

slight movement of the hand wheel, is assisted by four springs which cause the levers to release their hold the instant pressure is removed.

The new thread indicator is shown in detail in Fig. 7. The shaft R, to the top of which is fastened the dial, is connected through gears S and worm T to the lead screw. On the dial is a pointer adjustable to either of the three series of divisions. A four-pitch lead screw is used, consequently the thread will catch once in each half inch of

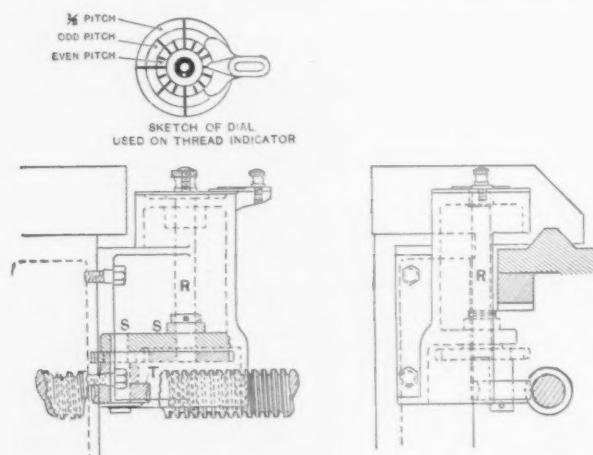


Fig. 7.—Means for Obtaining Feeds and Screw Pitches.

lead screw for an even pitch, once to an inch for an odd pitch and once in 2 in. for each fractional pitch having two as a denominator. The ratio between lead screw and dial shaft being 8 to 1, the dial makes a complete turn for each 8 in. of travel of the carriage, and therefore the thread may be caught in any one of 16 positions of the dial for even pitches, in eight positions for odd

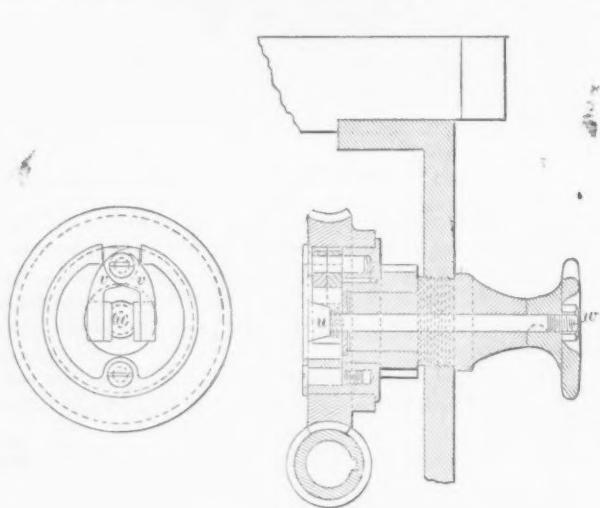


Fig. 8.—The Apron Clutch Mechanism.

sion from the lead screw to the dial shaft is arranged so that there will be no interference between it and the end screw box.

The apron friction is shown in Fig. 8. The turn of the knob causes the cam block U to expand the two lever arms V, thus setting the friction. An important feature of this arrangement is that for adjustment. The clutch block is tapered, so that by tightening or loosening the nut W in the knob adjustment, greater or less pressure is obtained.

A German Electric Contractors' Drill.

For extra heavy and difficult drilling in stone, concrete, &c., an electrically driven drill has been developed by Siemens & Schuckert, Berlin, Germany. About two years ago this company brought out a machine which resembled this one in many respects, but it did not fill the want for a machine for heavy work, and so the present one was developed. This "handle machine," as it is called, has a direct connected 1-hp. motor mounted in a saddle on the back of the machine. The motor is easily disconnected from the machine and is, as well as the machine itself, absolutely water and dust proof.

The machine operates in either a vertical or horizontal plane, as shown in Figs. 1 and 2. By employing special cutting tools it can be used quite readily as a cutting and channelling machine. It can be used on the

toughest and hardest granite, the energy demand not depending on the quality of stone or other material worked. The manufacturers of the drill recommend for medium and soft stone and similar work the working of a hole

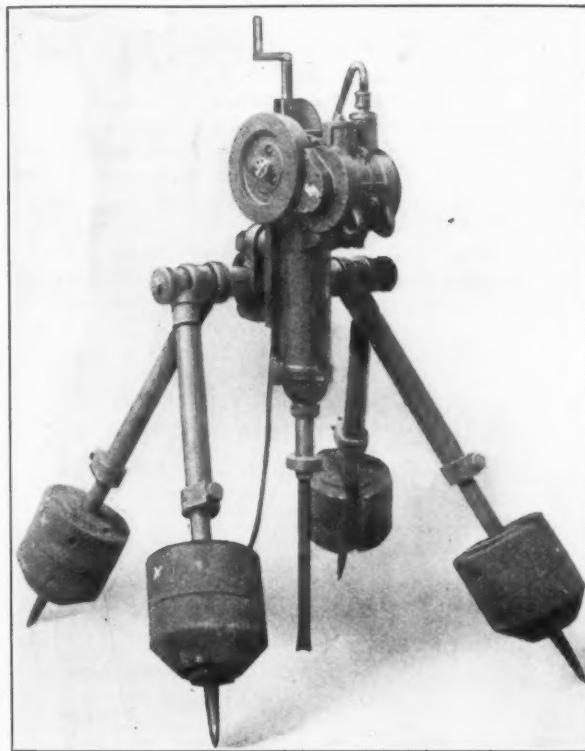


Fig. 1.—Vertical Mounting of the Siemens & Schuckert Electric Rock Drill.

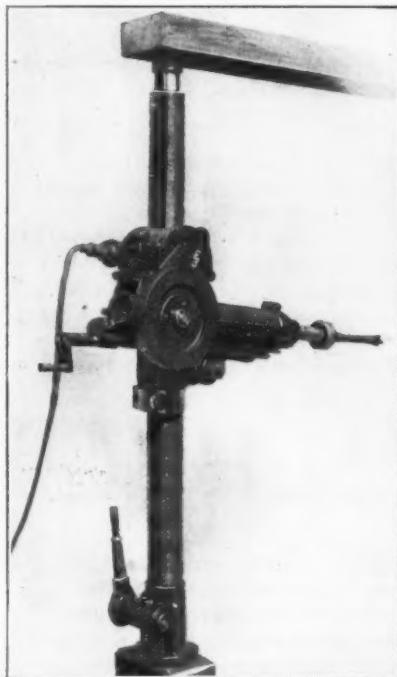


Fig. 2.—Horizontal Mounting.

The Siemens & Schuckert Electric Contractors' Drill.

of about $\frac{1}{2}$ to 2 in., while in granite a diameter of about $\frac{1}{2}$ to $\frac{3}{4}$ in. is advisable. In consequence of the drill having a very quick and powerful retreat its operation is more than ordinarily even.

One of the decided advantages of the machine is its small energy demand. It is claimed to be equivalent to a steam drill of double its horsepower rating. The current is supplied through flexible conduit 250 to 300 ft. long, the slack of which is automatically taken up by a spring wound drum. The connecting plug is attached to the drum and is practically a part of it, being well secured a few feet from the end to keep it from being

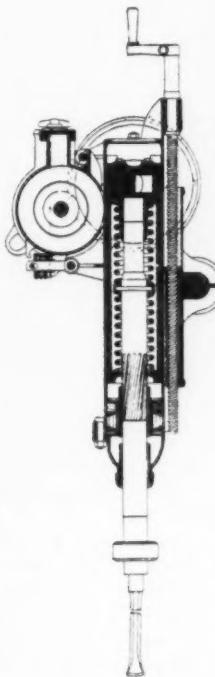


Fig. 3.—Section.

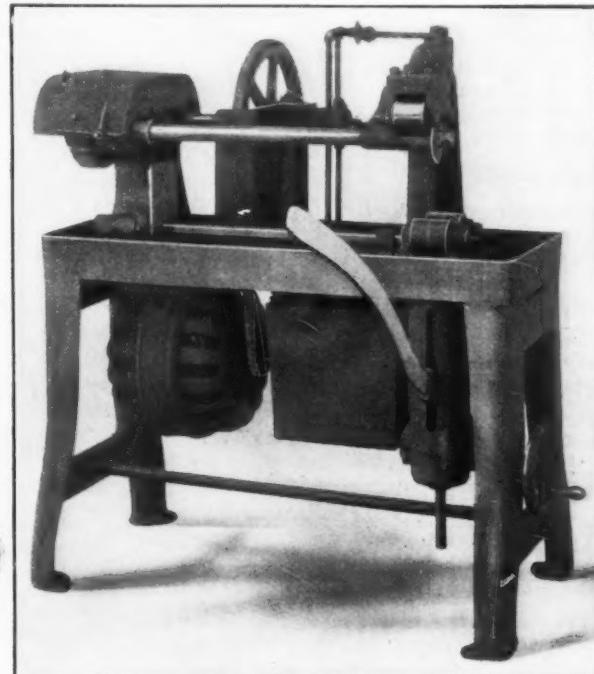
pulled off the drum. After the connection to the drill is made the operator has only to turn the switch on the drill to set the machine in motion.

A sectional view of the drill is given in Fig. 3. By means of a wheel located on the handle shaft the handle movements become driven by the motor and balanced by a flywheel, the motor operating the thrust mechanism. In the cylinder are located two heavy springs which surround the working thrust plugs.

The weight of the machine exclusive of the motor is 220 lb., while the motor weighs 100 lb. When the machine is working a vertical surface, as in Fig. 2, an iron column of about 5 in. diameter is used, which usually weighs about 250 lb., so that it is readily seen that this type of drill is much heavier than those of American manufacture intended for the same work.

A Fox Motor Driven Pipe Cutter.

A compact arrangement of motor drive on a No. 6 pipe or tube cutter, made by the Fox Machine Company, Grand Rapids, Mich., is here illustrated. There is practically no change from the standard machine except that the bed is provided with two pads for bolting on the motor. Power from the motor is transmitted through a



The No. 6 Pipe and Tube Cutter, Motor Driven, Built by the Fox Machine Company, Grand Rapids, Mich.

Morse silent chain and a series of gears to the cutter shaft. The flues to be cut rest on the two rollers under the cutting disk, and the hand wheel shown below adjusts the position of the rollers for different sizes of pipe or flues. The material is brought in contact with the cutter by depressing the front lever, which raises the rollers, thus bringing the flue or pipe against the cutting disk, where it is quickly severed. Standard wrought iron pipe of ordinary sizes, it is claimed, can be cut off in about 3 sec.

The machine is regularly equipped with an oil pump and tank for supplying lubricant to the cutting disk. Because of the inconvenience in supplying power to a belt driven machine, when it is desired to use it in a pipe shed or other place remote from mechanical power, it is believed that this self-contained motor driven type will be appreciated. The motor is a 3-hp. Westinghouse alternating current motor, wound for 440-volt, 60-cycle, three-phase current. Two cutters of the type and size here shown were recently furnished one of the largest railroad systems for its locomotive boiler shop for cutting off boiler flues, safe ends, &c. Four-inch boiler flues can be cut off in about 8 sec.

THE BRAY CONTINUOUS SHEET MILL.

Located at the Mercer Works of the American Sheet & Tin Plate Company, South Sharon, Pa.

The general arrangement of the Bray continuous sheet mill at Sharon, which was built during the year 1906, is shown in Fig. 1. The mill consists of four double continuous pair heating furnaces and nine sets of sheet rolls, all driven from one 30 x 60 x 72 in. cross compound engine.

In the operation of this mill the sheet bars are received at the plant cut to the proper length, and are unloaded and stored by cranes. Bars are taken by crane and delivered on a platform in the rear of the continuous heating furnace shown in Fig. 2. The bars are piled

the first set of rolls, and from this point on the bars are taken care of automatically.

The apparatus employed for feeding the bars through the first group of six rolls is shown in Fig. 3. Depending swinging arms are employed, together with stationary tables, and, as will be noted, on the bottom of these arms are swinging fingers and there are two arms in front of each set of rolls. Thus as the bar emerges from the first set of rolls on an inclined stationary table the reciprocating arms returning pass over this bar, the swinging fingers permitting the arms to pass over the

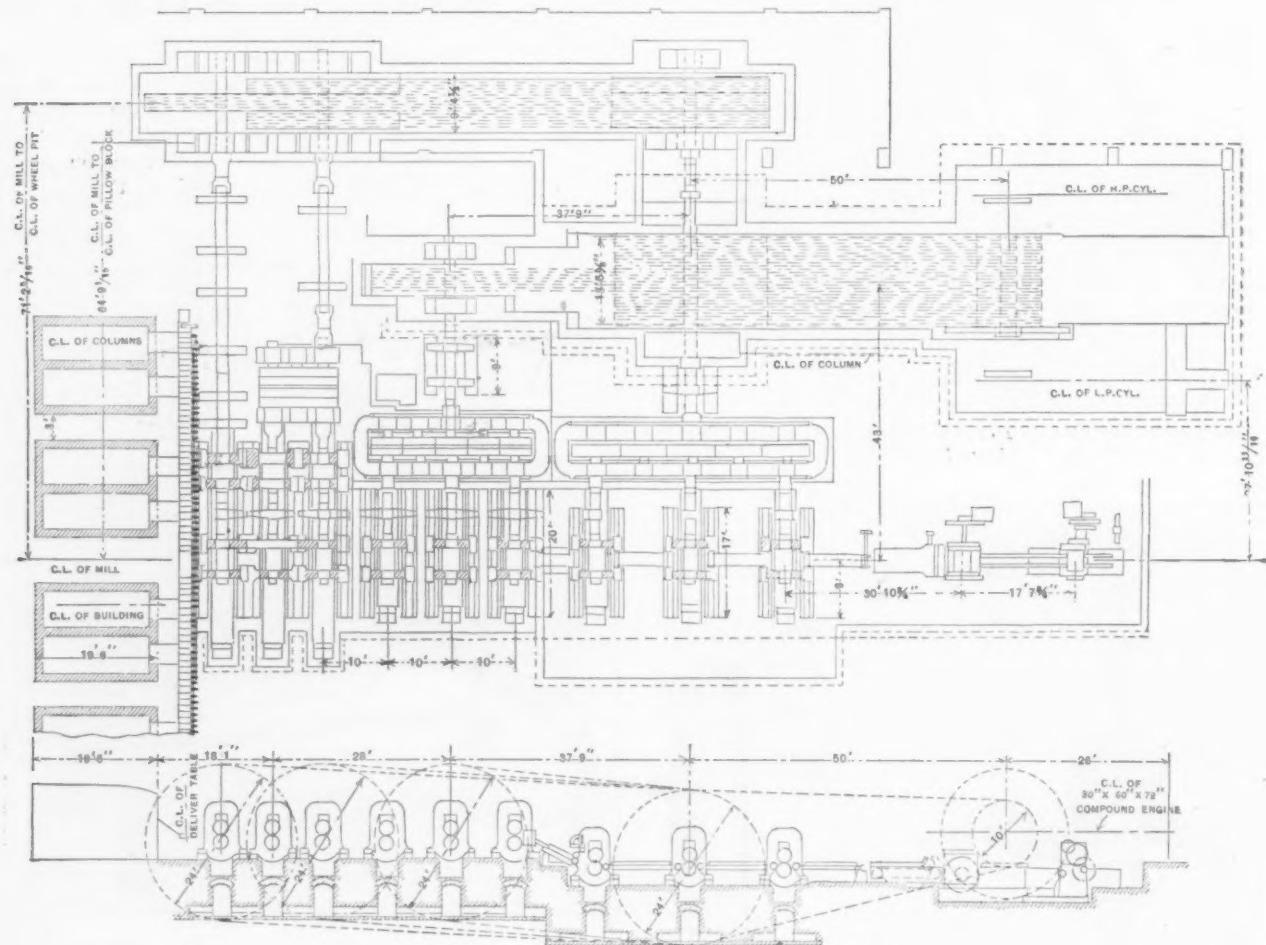


Fig. 1.—General Arrangement of the Bray Continuous Mill in the Mercer Works of the American Sheet & Tin Plate Company, South Sharon, Pa.

in twos and threes, depending on the number of sheets that are to form the pack, on guides in the rear of the furnaces.

The furnace, as shown, consists of two chambers, and in each chamber are two water cooled pipes carrying corrugated tile. In the operation of the furnaces these pipes are raised, carried forward and lowered, so that the groups of bars are carried forward step by step in the furnace, the ends of the bars resting on the brick side walls in the furnace. At each step forward one group of bars is delivered from the front of the furnace on a roller table, the bars being piled two or three high, as the case may be, and consequently uniformly heated. The furnaces are operated by a motor and stop device, whereby the furnaces are operated one after another successively at the rate at which the bars are being required for the mill. The furnaces are fired by producer gas.

The roller tables in front of the furnaces operate continuously and feed the bars toward the center in front of the first set of reducing rolls. At this point there is a man who starts the bars singly and successively into

bars without disturbing them, and then in its forward movement the two arms engage the rear of the bar and feed it forward squarely into the next set of reducing rolls. This arrangement is necessary, as in a mill of this character it is essential that the bars enter the rolls perfectly square. Chain tables are not desirable for the reason that the bar is of such short length that side guides do not necessarily guide the bar perfectly square with respect to the table, and the piece is apt to enter the next set of reducing rolls at an angle. After the bar has been elongated to some considerable extent, chain tables are desirable and are used, as will be shown later.

As will be noticed by the general drawing, Fig. 1, the bars pass singly through the first group of six pairs of reducing rolls. After emerging from the last pass the bars slide down onto an inclined table into a matcher, the front edges being held at the lower end by means of a stop. The general practice is to match in threes and consequently plates pile up one on the other in this matcher, the front edge of each plate coming against the stop. This matcher is shown in detail in Fig. 4. The stop is shown in its lowered or inoperative position, but

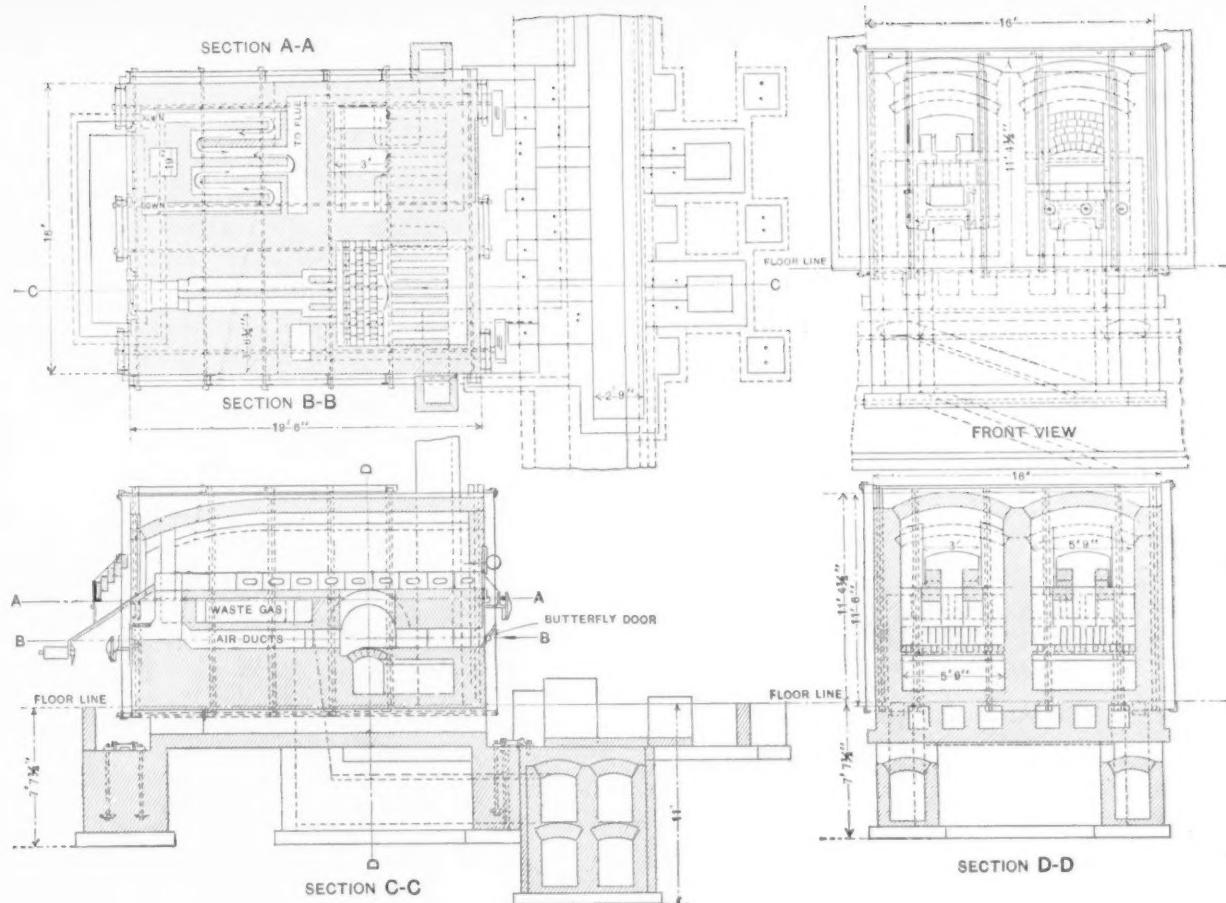


Fig. 2.—The Continuous Heating Furnace.

is normally held in an upper position, and the plates coming against this stop pass between the set of positively driven feed rollers, which are opened when the stop is raised so as to permit the plates to pass between them.

In the operation of the matcher, after the two or three plates have passed one on top of another to the inclined table and are against the stop, the operator, by means of a lever, squares up the pack by reciprocating side guides operating through link mechanism. Holding the side guides in this position, the operator by means of hydraulic cylinders lowers the stop, at the same time lowering the positively driven feed rollers, and the pack thus held together by these feed rollers is fed forward

into the next set of reducing rolls. The feed roll and stop is then raised, and the side guides opened ready for the next cycle of operations. The pack thus formed is carried forward through three sets of reducing rolls with intermediate chain tables. After leaving the last set of reducing rolls the pack is passed through a water bosh, which suddenly chills and contracts the metal, and thence through an opening machine, whereby the sheets are loosened.

From this machine the plate is carried forward on chain tables to a roller doubler. This doubler is shown in Fig. 5. The pack is brought to a central position under the rolls of this doubler by means of centering devices, and a plunger then feeds the center of the pack up into

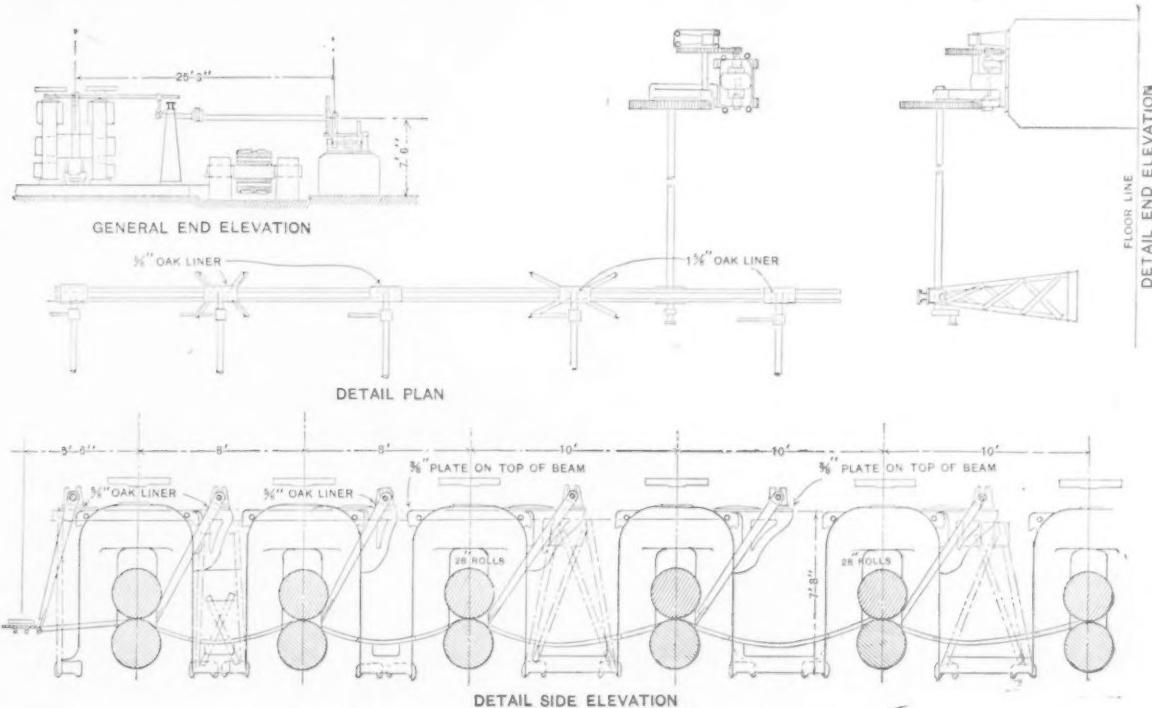


Fig. 3.—Apparatus for Feeding the Bars Through the First Group of Rolls.

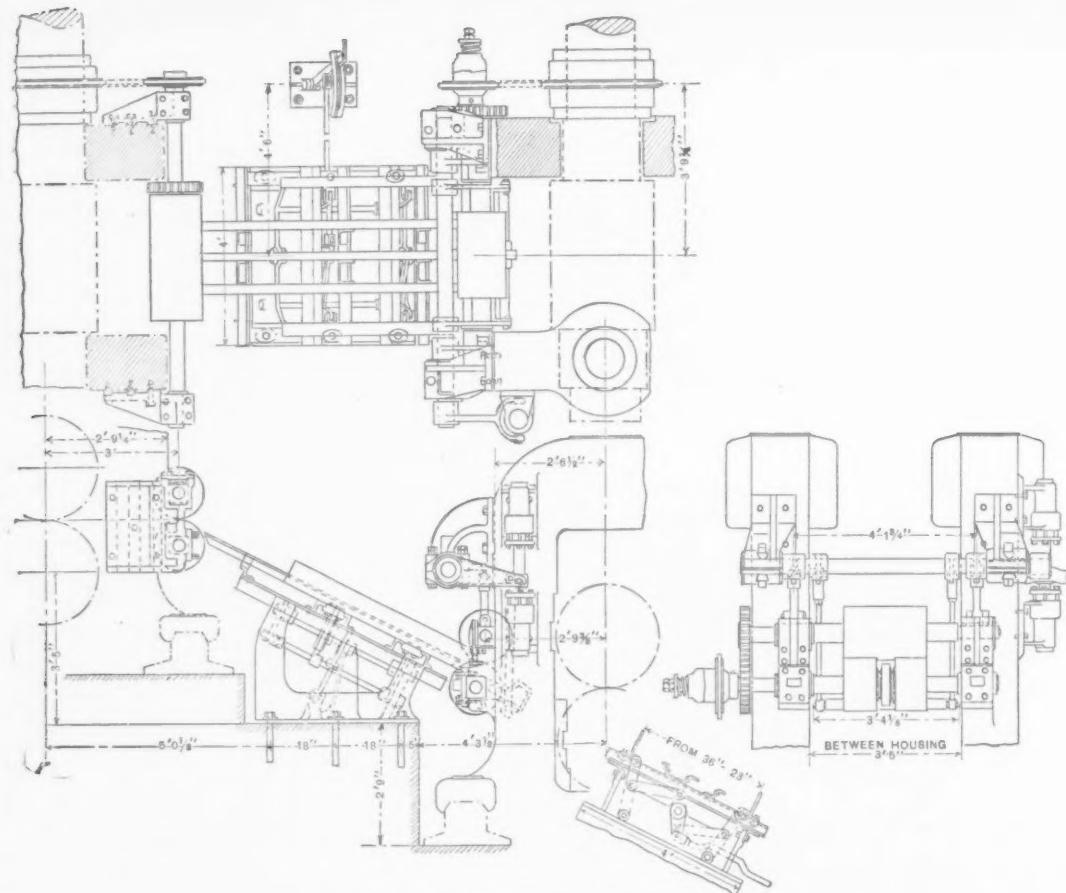


Fig. 4.—General Arrangement of the Matcher.

the bite of the doubler rolls; the plunger dropping back to its normal position and the pack feeding through the doubler to a delivery table, not shown. From this delivery table the plates are automatically delivered under a small overhead traveling crane, where the packs are carried to the rear of the sheet furnaces for reheating, the packs being fed into the rear of these furnaces and drawn from the front of the furnaces by hand. In this

plant there are five sets of finishing rolls, and the operation of finishing the product is the same as in the regular processes employed to-day.

As will be noticed from the general arrangement, the mills are driven through rope drives and gears; the rolls run at about 28 rev. per min. Owing to the weight of the bar for rolling sheets, it was found desirable to have the first three sets of rolls in the roughing train balanced mills, the top rolls to be driven through pinions, as shown. Bars are fed through this mill at the rate of about 16 per minute, the output of this mill being about 150 gross tons per 24 hr. The sheets are reduced to approximately 18 gauge in the continuous mill, and are finished in the single stands of rolls in the regular manner.

In the operation of this mill it is, of course, desirable to maintain uniform and regular operations, in order to preserve to the best possible degree the proper contour of the rolls. Therefore the construction throughout the mill was made very heavy to withstand shocks and strains, and the rolls in use are 28 in. diameter, with 22-in. necks. The general practice in rolling material

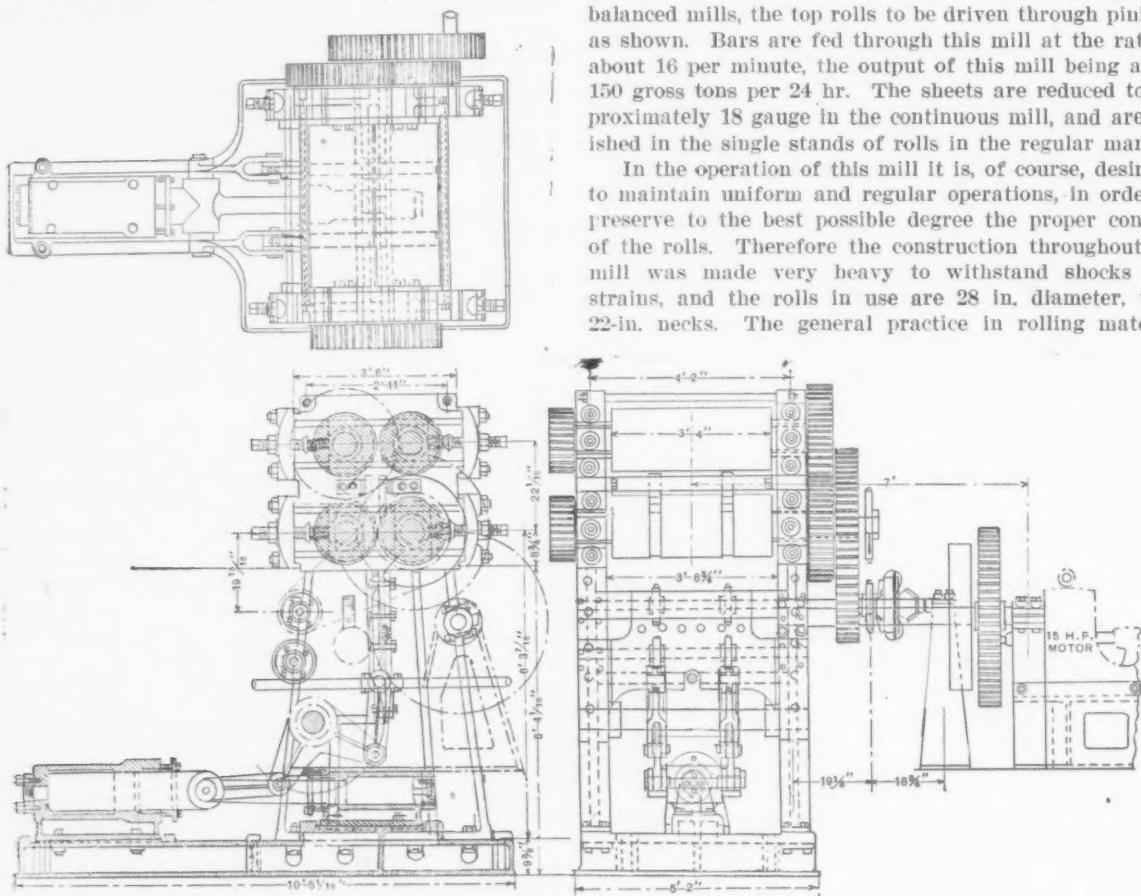


Fig. 5.—General Arrangement of the Doubling Machine.

of this character is to use 26-in. rolls with 20-in. necks.

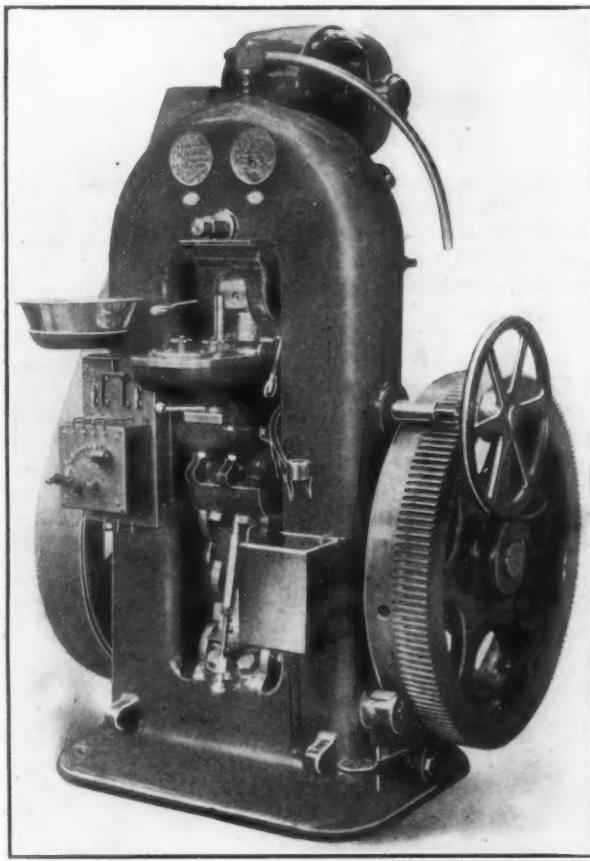
The first mill, after the pack is formed, is subject to very severe work and some trouble has been experienced from roll breakage on this particular mill. The housing used on this mill, therefore, is a steel housing with open windows, permitting the rolls to be removed from the window instead of having to separate the housings, as is customary in mills of this character. In order to handle these rolls to the best advantage, they are picked up on the end of a gooseneck, the end of the gooseneck fitting closely over the wabbler of the roll; thus the two rolls can be easily and quickly removed by means of the gooseneck and an overhead traveling crane, and new rolls put into position and the rolling continued.

Owing to the rapidity of the operation of rolling, it is possible to obtain a greater reduction with the first heating than is possible in the regular process of rolling sheets, and the advantages to be obtained by the use of this mill consist in greater output and lower labor cost.

A New Ferracute Coining Press.

There are several new features in a coining press recently shipped to a foreign country by the Ferracute Machine Company, Bridgeton, N. J.

The frames of all presses for embossing coins have the shape of a letter O, the distance between the side



A New Coining Press Built for a Foreign Mint by the Ferracute Machine Company, Bridgeton, N. J.

columns being just enough to allow for the coining mechanism, and all sections of the frame being much in excess of what is needed for strength, so that there is no possibility of spring. All modern coining presses contain a toggle or knee joint mechanism to produce the great pressure required to make the cold metal flow sharply into the recesses of the design sunk into the hardened steel dies. The press illustrated is driven by an electric motor mounted on a shelf at the rear. The rheostat is conveniently placed at the left front.

Coining dies must be set with extreme accuracy, the press being run by hand during the operation. The usual method has been to insert a bar or lever in a hole in the face of the flywheel, but in this machine a hand wheel and pinion, engaging teeth cut in the rim of the fly-

wheel, enable the operator to revolve the press by hand with ease. The hand wheel stud is made sufficiently long to allow the hand wheel to be slipped out of gear without removing it from the press.

Another new feature is the adjustable stationary ejecting rod, which extends up through the bed and ejects the coin as the ram descends. The swinging head is also a valuable device. Pressure on the hand lever at the left of the dies unlocks the head, which can then be swung outwardly by the hand lever at the right. As this head contains the upper die, which must frequently be inspected, the convenience of this arrangement is apparent; the ordinary procedure is to remove the die. The head can be swung back and locked in position in an instant. The lower die, with its connected parts, may also be removed conveniently and quickly by turning three hand nuts; two of these are shown on the bolster and the other is at the back of the machine. The press has a wedge adjustment; the wedge is shown just above the swinging head, and the wedge adjusting bolt and lock nut are also shown.

The head containing the upper die is supported by a stiff steel spring, shown at the top of the press, which keeps the head up against the upper part of the press frame with considerable tension while the press is running, and which may be sufficiently released when setting or adjusting the dies so as to just take the weight of the head.

Much attention has been devoted to the feeding mechanism, which is claimed to be superior to that commonly used. It is impossible for two coin blanks or planchets to come between the dies at the same time, and automatic devices are provided for removing the embossed coins as well as accurately locating the planchet between the dies.

A curious feature in connection with coining is that time must be provided for the metal to flow. For this reason a press coining silver dollars must be run at a slower speed than when embossing coins of a smaller size, even if, as in this case, the mechanical operation is otherwise satisfactory at a higher speed. The press illustrated runs from 90 to 120 strokes per minute, and the pressure exerted by the ram is 250 tons. It is the third in a series of four sizes built by the Ferracute Machine Company and weighs 10,700 lb.

Micanneal, an Annealing Packing

A packing material for covering steel during annealing, to prevent rapid cooling and oxidation of the surface must be a good heat insulator; that is, allow heat to pass through it but slowly, and also must contain no constituents likely to affect the qualities of the steel, either through fusing or oxidation. This requires that the packing shall be infusible at the temperatures used and shall not be capable of absorbing gases. The Laurentide Mica Company, Ltd., Pittsburgh, Pa., has just placed on the market a product known as Micanneal, which is infusible, will not absorb gas and is a remarkably good heat insulator. Therefore it prevents the steel from being heated or cooled too rapidly, and also protects it from oxidation. Under the same circumstances pieces packed in micanneal will require from 25 to 150 per cent. longer to heat and to cool than with any other packing, which it is argued insures greater uniformity of the steel and the pieces come out clean with no evidence of scale. Micanneal is prepared in different degrees of fineness from the coarsest to the finest mesh and is ordinarily sold in lots of approximately 100 lb.

The Superior Iron & Steel Company, Warren, Ohio, has been formed with a capitalization of \$300,000 to operate the plant of the Penn Shovel Mfg. Company, on which the men interested have secured an option. For the present the company will devote itself to the manufacture of sheet steel. The incorporators of the company are O. E. Krueger, M. H. Joy, Robert A. Slater, Mathias Slater and C. F. Clapp.

The Prentice 16-In. Shaft Turning Lathe

The 16-in. shaft turning lathe illustrated is designed for rapidly machining shafts and studs. It is equipped with the standard headstock and quick change feed mechanism, embodied in the regular line of geared head lathes of its builder, the Prentice Bros. Company, Worcester, Mass. Three levers at the front of the head give eight changes of speed, while 44 changes of feed and screw pitches are obtained in the feed mechanism. The illustrations show the lathe without the lead screw, but the machine will hereafter be regularly equipped for thread cutting, as it has been found that users desire this feature in connection with the work for which the lathe is specially intended. Its capacity is from 13-16 to 5 in. diameter.

The characteristic features of the machine are a tailstock cut away for the passage of the tool blocks, and with spindle grooved to prevent interference with the points of the cutting tools; a tool carriage with the bridge at the left end and the bearings projecting to the right, and a roller follow rest, which assists in forming the equivalent of a box tool. As the tools are on the rear bearings of the carriage the spindle revolves backward, or the reverse of the usual rotation, and the face plate is keyed to it. The feed may be either backward or forward. The tool blocks permit the use of 10 cutting tools, if so many are desired.

Fig. 1 is a general view of the machine. From Fig. 2, which shows the rear of the tailstock, it will be seen that the tool blocks and tool have a clear passage by the tailstock, which arrangement is essential to the machine. Preparatory to turning, the tool carriage must be run back, so that the first tool will start to cut at the right end of the shaft, and in this position the tools must clear the tailstock. Ample clearance is especially necessary when producing small diameters. In Fig. 3, the cutting tools are directly behind the tailstock, which leaves the space between the centers free of obstruction when taking out or putting in work.

Fig. 4 shows the construction of the tool carriage and roller follow rest. The reversing of the positions of the bridge and bearing enables the tool block to pass the tailstock. The blocks are bound to the dovetail on the rear bearings of the carriage by means of packing screws. In setting the tools at the desired distances between the shoulders on a shaft the three packing screws are slightly loosened and the entire tool carrier is slid to position and there locked by the screws. The cutting tools are held in the slots by hardened steel taper wedges, brought to bear by means of an adjusting screw, the square end

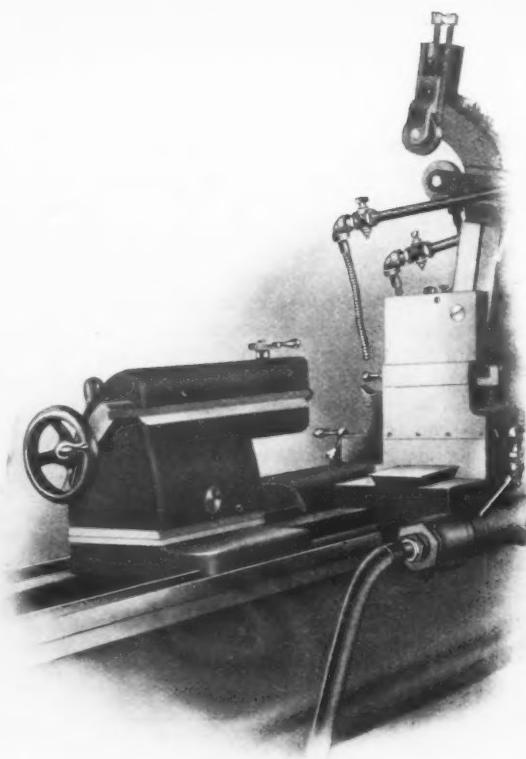


Fig. 2.—A Detail of the Tailstock of the Prentice Shaft Turning Lathe.

of which is seen projecting through the front of the block, directly over each slot. The screw in the bottom block, operated by the socket wrench used for the tool binder screw, is fitted to a nut in the lower part of the block, and brings the tool to or from the work in obtaining the desired diameter.

The roller follow rest is seen in Fig. 4, lifted out of the way in the left hand block and lowered into position for operation at the right hand. In this latter position the rest is forced under a ledge which securely binds it in position. The fitting is so exact that the presence of a particle of grit or chip under the follow rest will prevent it from sliding beneath the ledge. The roll carriers may be fastened at either side of the follow rest, so that the rolls may be brought to bear upon the work directly following the tool cut. The combination of the two rolls with the cutting tool constitutes a box tool. Provision

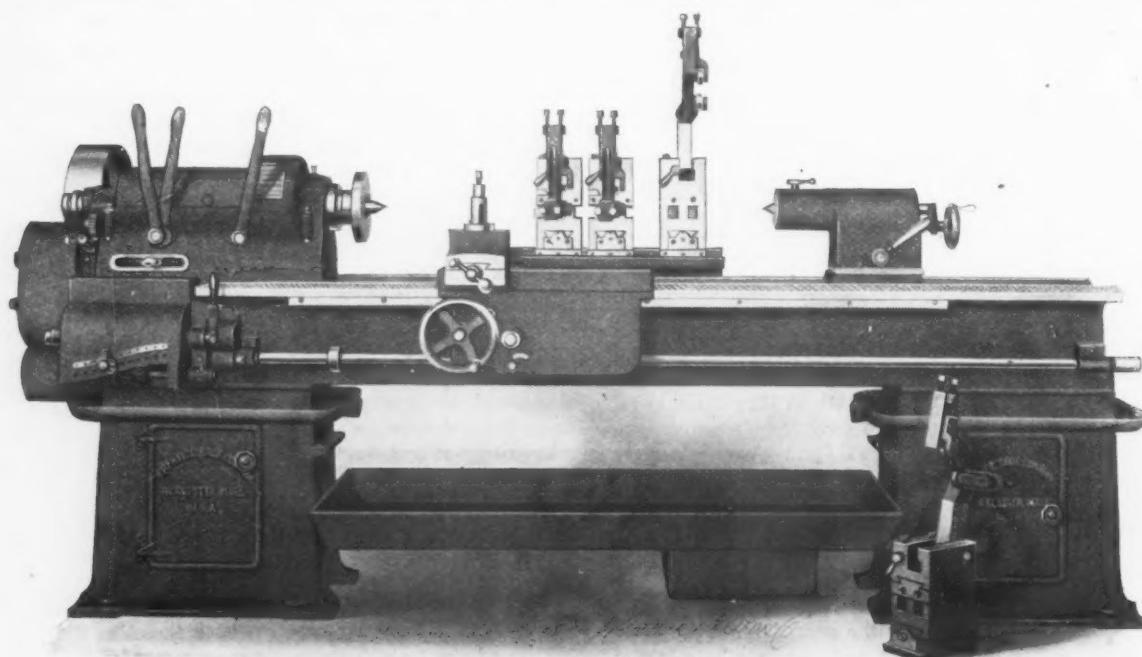


Fig. 1.—The 16-In. Shaft Turning Lathe Built by the Prentice Bros. Company, Hartford, Conn.

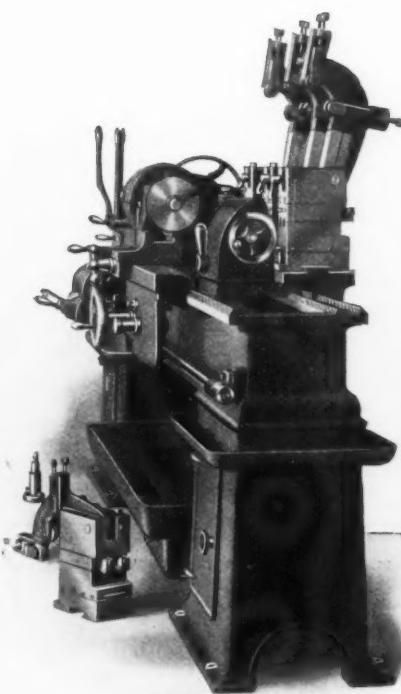


Fig. 3.—An End View of the Lathe, Showing the Tool Blocks Behind the Tailstock.

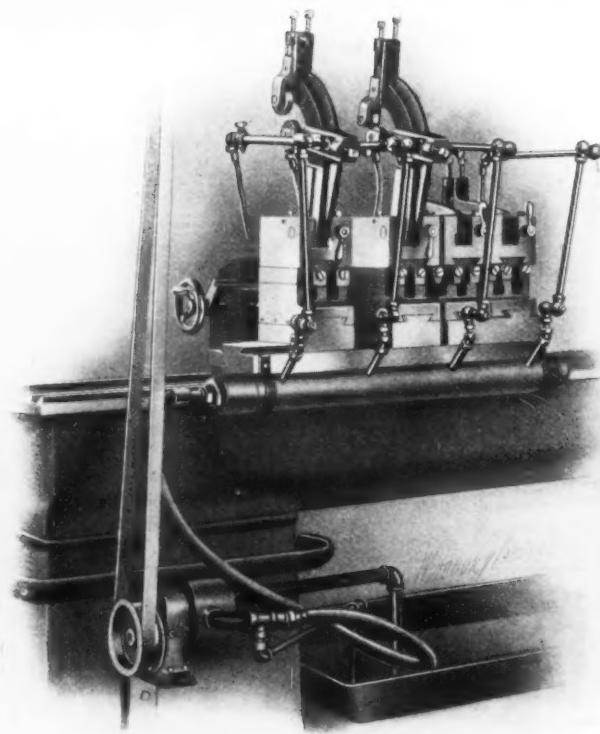


Fig. 5.—A Rear View of the Tool Carrier, Showing the Tool Lubricating System.

is made for flooding the work with cutting compound by the arrangement shown in Fig. 5.

The following are among the more important dimensions: The diameter of the front bearing is 2 13-16 in.; length of front bearing, 5½ in.; diameter of rear bearing, 2 3-16 in.; length of rear bearing, 3½ in.; hole in spindle, 1¼ in. The lathe swings 17½ in. over the ways, and the maximum distance between centers with a 9-ft. bed is 62 in. The follow rests have a capacity to turn 5 in. The width of the driving belt is 3 in. on a 12-in. pulley from a 12-in. countershaft pulley, running at 350 rev. per min. The 44 changes of thread pitches range from 2 to 30. The net weight with a 9-ft. bed is 3300 lb.

Among recent car orders are those of the Pittsburgh & Lake Erie, for 500 steel hopper cars, of the Lackawanna for 500 box cars and 300 steel hopper cars, of the Louisiana Central for 15 logging cars, of the Cuba East-

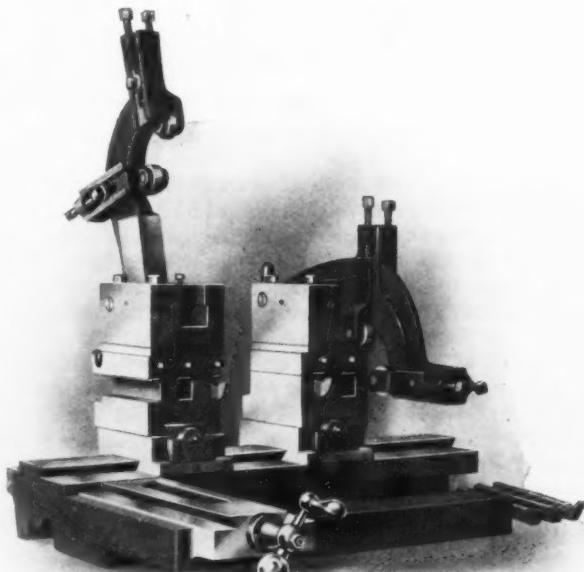


Fig. 4.—Detail of the Roller Follow Rests and Tool Blocks.

ern for 20 flat cars, and of the Virginian Railway for 30 passenger and baggage cars. The Rock Island has ordered 35 locomotives; the Carolina, Clinchfield & Ohio, 20; the Virginia Railway, 19; the Chicago, Cincinnati & Louisville, 5; the Union Railroad, 10, with scattering orders amounting to 20. The Wabash-Pittsburgh Terminal Company is negotiating for 12 locomotives.

Pennsylvania Railroad Locomotives.

Forty-two locomotives are to be built at the Altoona shops of the Pennsylvania Railroad for service on the main and branch lines east of Pittsburgh, an order having been given for 27 last week. These comprise 33 engines of the H-8-H type for freight service, and nine heavy shifting engines. The H-8-H type locomotives are the heaviest yet designed for main line service and will weigh almost 200 tons each. The new order for H-8-B engines will make a total of 72 engines of this type ordered from the shops at Altoona this year, though they will not all be completed until some time next summer. The order placed last week is the largest of its kind given to the Altoona shops since the depression set in last fall. At present the company has a number of freight locomotives which were delivered last spring and which have never been used, as they were kept in the shops and roundhouses on account of the reduced traffic.

The Wealth of France.—Leroy Beaulieu, a prominent French statistician, estimates the present wealth of the French people at \$45,000,000,000, or more than \$1100 for every man, woman and child in France. He further says that as the estimate is based upon declared succession taxes it is admittedly much below the real figures. In this estimate no account is taken of the vast amount of gold and securities which the French, especially the peasants, keep in concealment and which probably rivals the hidden treasures of India. The accumulations of the country are growing steadily as the result of annual saving of \$1,000,000,000, much of which must seek investment abroad. France now receives \$360,000,000 as an annual income from foreign holdings, which are principally government bonds, the amount having been almost doubled in the last 15 years.

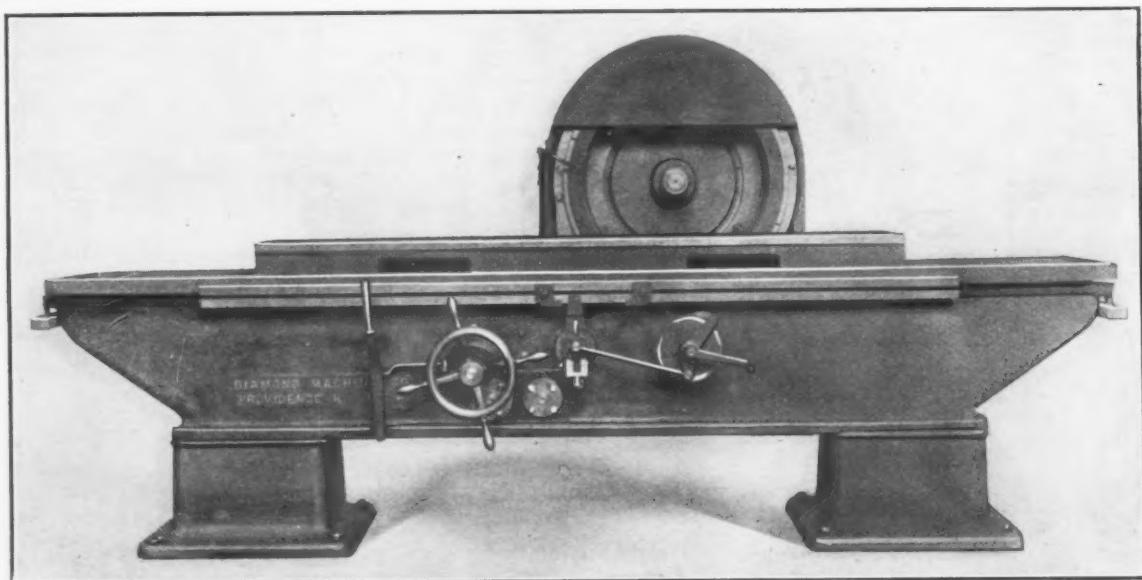


Fig. 1.—A New Guide Bar and General Face Grinder Built by the Diamond Machine Company, Providence, R. I.

A New Diamond Face Grinder.

A large face grinder for general shop use has recently been put on the market by the Diamond Machine Company, Providence, R. I. In it particular attention has been paid to the needs of railroad shops, and the machine is especially designed with a view to grinding locomotive guide bars. This, however, is only one of the many ways in which it has proved efficient, as it is equally well adapted to grinding of work of almost all kinds, including castings such as machine parts, pipe flanges, floor plates, &c. The wheel grinds cast iron with great speed.

Fig. 1 shows a front view of the machine in its belt driven form, Fig. 2 a partial rear view of the same machine, Fig. 3 a partial rear view of a machine equipped with motor drive and Fig. 4 a view of the machine in use on typical work—in this case venturi water meter register cases.

Among the advantages of the machine these may be mentioned: Its operation is not hindered by hard iron or material of any kind. The work need not be so rigidly fastened as on a planer or milling machine. The mechanism movements are lively compared with those of other

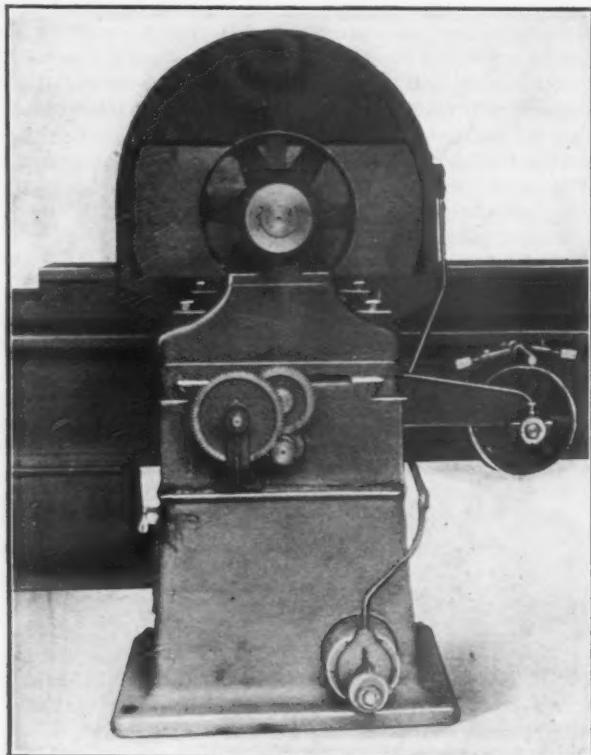


Fig. 2.—Detail Rear View of the Belt-Driven Machine.

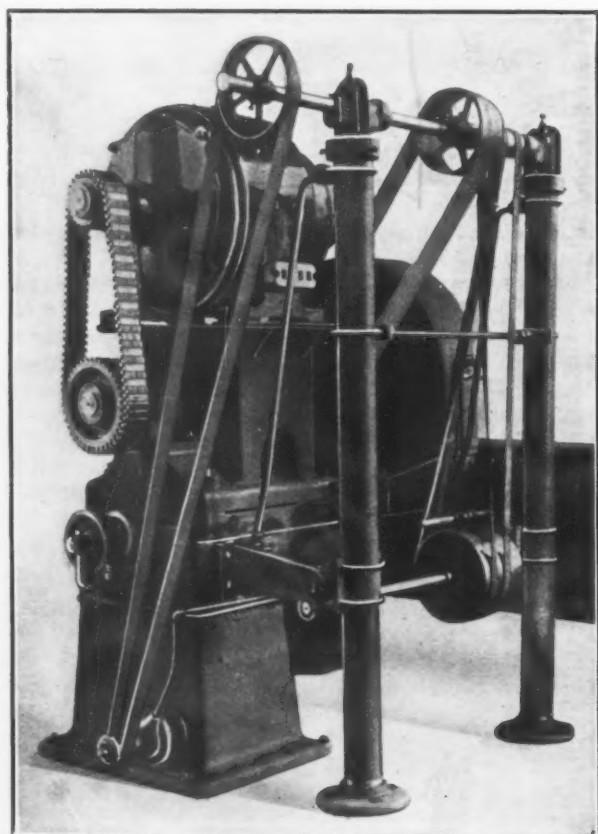


Fig. 3.—Detail Rear View of the Motor-Driven Machine.

machines doing this class of work. The emery ring is held in a steel bound adjustable chuck, as on machines of this nature the wheel should not run unsupported.

The bearings are ample, are lined with babbitt, are ring oiling, and are well protected from dust. The end thrust is taken by a ball thrust bearing. The longitudinal table feed is obtained by open and cross belts which are connected to heavy gearing and a rack, with automatic reversing mechanism for any length of stroke, shifted by adjustable dogs. When hand feed is desired a clutch is thrown in mesh with a hand wheel, which is shown in the front view, Fig. 1. The cross feed is either automatic or by hand, as desired, and is capable of fine adjustment. An automatic pump with attachments is furnished for wet grinding on all machines.

The following are the more important dimensions applying to the 84-in. machine:

Length of bed, inches.....	134
Length of table, inches.....	130
Width of table, inches.....	19½
Length of platen (4 slots 13-16 in. wide), inches.....	84

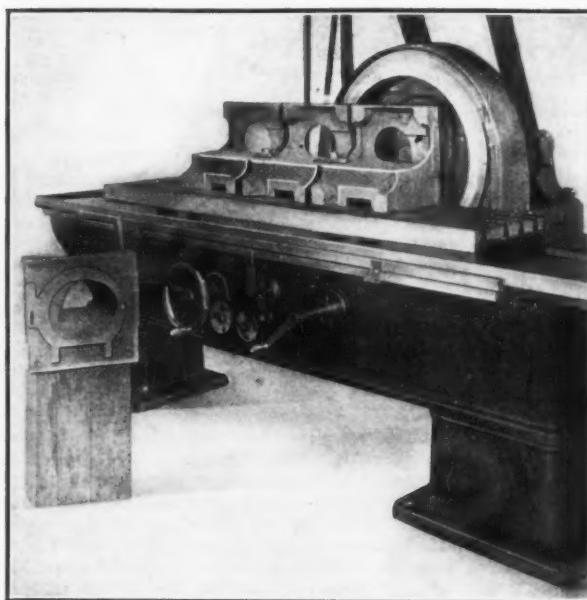


Fig. 4.—The Machine as Used for Grinding Miscellaneous Work.

Width of platen, inches.....	17½
Table travel per minute, feet.....	20
Total length, including table travel.....	18 ft. 4 in.
Total floor space required for operating.....	18 ft. 4 in. x 7 ft.
Diameter of wheel (in adjustable holder), inches.....	30
Wheel speed, depending on work, rev. per min.....	350 to 700
Diameter of wheel spindle, inches.....	3½
Wheel spindle bearing, inches.....	3½ x 10
Weight, complete with countershaft, pounds, about.....	8,000
Weight, with motor drive, pounds, about.....	10,000

These machines have been built in 84 and 114 in. lengths for belt or motor drive. Longer machines can be made if desired.

Government Supervision Over Corporations.

Announcement is made that President-elect Taft is working out the details of a plan designed to increase the efficiency of government regulation of corporations doing an interstate business. Mr. Taft's friends say that the proposed plan will need legislation from Congress decreasing the powers of the Interstate Commerce Commission, greatly increasing the powers of the Bureau of Corporations in the Department of Commerce and Labor and creating a practically new bureau in the Department of Justice.

The general outline of the plan is described as follows: The Interstate Commerce Commission is to be relieved of its duties as an investigating body. It is to be a commission exercising only quasi-judicial functions. The jurisdiction of the Bureau of Corporations, on the other hand, is to be extended over all corporations doing an interstate business. It will be charged with the detailed work of investigating and preparing cases.

This bureau, acting upon individual complaints or upon its own initiative, will lay the results of its investigations before the Interstate Commerce Commission for decision. It will originate all cases. The new bureau in the Department of Justice will work in co-operation with the Bureau of Corporations and the Interstate Commerce Commission when legal aid is necessary.

Mr. Taft's friends say that the proposed plan does not contemplate the licensing of corporations, but that under it corporations will probably be obliged to submit to closer scrutiny by the Bureau of Corporations. Under a plan such as Mr. Taft's friends suggest the Department of Commerce and Labor, containing the Bureau of Corporations, will become a Cabinet post of the first importance.

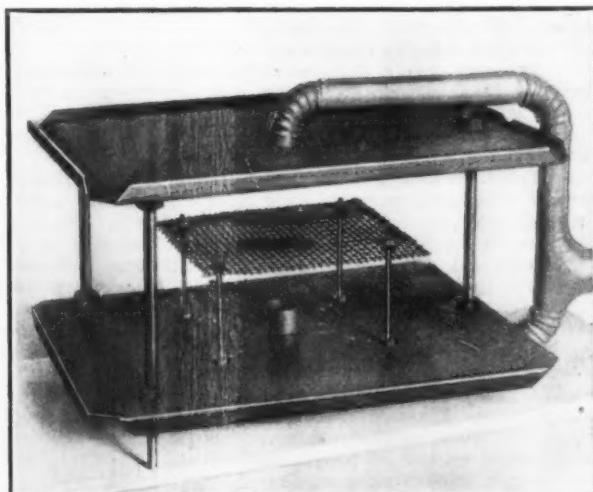
Statistics collected by the *Electrical World* show that the number of students enrolled in electrical courses in the universities, colleges and technical schools of the United States at the end of the scholastic year 1907-08 was 9651. The number of graduates for that year was 1501 and the grand total of graduates to date 12,805.

These figures only include students having followed systematic courses of electrical engineering, schools being excluded which conduct only evening classes or whose instruction covers only elementary or practical parts of electrotechnics. Adding the number of students who have dropped out after completing two or three years of work in electrical engineering, it is estimated that 17,000 young men have come from the technical schools of the country to enter the electrical industry.

The Krieger Cold Blast Tool Tempering Stand.

In tempering and hardening high speed steel by cold air blast it is desirable that the air circulate freely upon all sides of the tool treated. To effect this result the Krieger Tool & Mfg. Company, Grand Rapids, Wis. (Chicago office, 83 West Randolph street), has brought out an apparatus designed to hold the tool or tools between two impinging currents of forced air blast. This is accomplished by mounting a wire screen of reasonably fine mesh upon four steel rod posts between two sheet steel plates similarly supported by steel rods, and discharging the blast through a branched outlet to deliver the air simultaneously from above and below directly upon the screen.

To secure greater concentration and proper distribution of the blast upon a number of tools placed in the



A Cold Blast Apparatus for Tempering and Hardening High Speed Steels, Made by the Krieger Tool & Mfg. Company, Grand Rapids, Wis.

center of the screen. V-shaped sheet steel hoods with slotted openings at the apex, and closed ends, can be attached to the top and base plates of the apparatus in a longitudinal line over the center of the discharge nozzles. These hoods do not appear in the engraving, not having been attached to this stand. By means of them the blast is distributed uniformly along the center line of the screen longitudinally, affording equal cooling to a number of tools, placed side by side, at the same time, all sides of which are surrounded by an equal flow of air.

This stand can be furnished in any desired size, and of varying weights, according to the service required. The one illustrated is approximately 2 ft. long, 18 in. wide and 12 in. high, with a tool holding screen 8 x 12 in., and is supplied with air through a 2-in. galvanized steel pipe. The upper cover of the stand affords a convenient shelf upon which to deposit tools after they have been tempered.

The Heil Company, Milwaukee, Wis., has moved into its newly constructed structural iron and boiler shops, at Twenty-sixth and Montana streets. The new plant is 80 x 140 ft., of steel, concrete and brick construction. A spur line of the Northwestern Railway runs through the center of the plant, affording excellent shipping facilities. A feature of the new plant is the 55-ft. tower for the accommodation of the new 24-ton upright Hanna air riveter.

TARIFF HEARINGS AT WASHINGTON.

Numerous Briefs and Statements Submitted Relative to the Metal Schedule.

WASHINGTON, D. C., December 29, 1908.—The Ways and Means Committee is in receipt of a large number of briefs and less formal written statements from prominent concerns in the iron and steel industry based in many instances upon the publication heretofore made in the columns of *The Iron Age* of full reports of oral hearings and liberal extracts from briefs and other documents which have attracted wide attention throughout the trade. An interesting feature of these briefs is the spirited attack made therein upon the testimony and written statements of prominent men in the industry, and it is already apparent that the Ways and Means Committee will have need of the combined wisdom of all its members in reaching just conclusions in the framing of the metal schedule. The statements referred to are as follows:

FERROSILICON.

Statement of the Bessie Ferrosilicon Company, New Straitsville, Ohio.

We earnestly beg that Congress will give us the protection on ferrosilicon, which was evidently intended, but which we are not now receiving. The conditions of the business, and particularly new methods of manufacturing, have altered the situation from what it was in 1897, when the present tariff act was passed, so that a readjustment of the duty is imperatively required. Otherwise an established business in this country, which has already declined, is threatened with extinction. During this last year our furnace has been shut down for almost all the time, owing chiefly to foreign competition.

Ferrosilicon is a combination of silicon and iron and is used in the manufacture of steel to make it sound and to prevent blowholes, &c. It was formerly made only in blast furnaces, and perhaps for that reason was classified in the tariff with pig iron, which is also made in blast furnaces, though, as indicated below, it never really belonged in that class. However that may be, since 1897 an important change in manufacturing has occurred, so that ferrosilicon can be and is now largely made by electro-metallurgical processes.

The value of ferrosilicon depends on the silicon content—that is, the amount of silicon present—so that a ferrosilicon of 8 per cent. silicon is worth correspondingly less than the ferrosilicon of 50 per cent. silicon. The blast furnace ferrosilicon only runs about as high as 15 per cent. silicon, whereas the electrical furnace product runs from 50 per cent. silicon up and has a correspondingly higher value. Yet all these kinds of ferrosilicon are now being admitted for duty, whatever their value, on a basis of \$4 per ton.

The official figures of the importations of ferrosilicon show three marked facts as between the year 1897 and the year 1907: First, that the importations have increased from 1,324.93 tons to 12,653.12 tons; second, that the value per ton has increased from \$17.60 to \$72.26, which, of course, is due to the fact of the increasing importations of the electric furnace product with its correspondingly higher values; third, that the equivalent percentage of duty on an ad valorem basis has consequently diminished from 22.73 per cent. to 5.54 per cent. The figures by years are as follows:

Year.	Duty per ton.	Tonnage.	Value per ton.	Equivalent percentage on ad valorem basis.
1897.....	\$4.00	1,324.93	\$17.60	22.73
1898.....	4.00	697	21.92	18.24
1899.....	4.00	1,559.26	24.00	16.66
1900.....	4.00	4,666.25	36.85	10.92
1901.....	4.00	546.22	30.92	12.94
1902.....	4.00	3,567.63	20.77	19.26
1903.....	4.00	23,795.35	24.63	16.24
1904.....	4.00	6,262.04	33.30	12.01
1905.....	4.00	6,833.99	48.93	8.18
1906.....	4.00	10,275.20	60.07	6.66
1907.....	4.00	12,653.12	72.26	5.54

The only way to secure proper protection on ferrosilicon is to remove it entirely from the class of pig iron and put it with such other ferroalloys as are made by both the blast furnace and the electric processes. Ferrosilicon, whether in the form of pigs or otherwise, never really belonged in the class with pig iron. To make a ton of it by the blast furnace process costs from two to three times as much for labor cost alone, besides requiring twice as much fuel as to make a ton of ordinary pig iron.

The total labor cost in making ferrosilicon, if we regard the entire cost of the manufacture from mining the ore to the complete ferrosilicon, is doubtless at least 80 per cent.

to 90 per cent. If we take the actual cost of the blast furnace process alone, it is, as before stated, from two to three times as great as in making pig iron; and if we compare this blast furnace part of the manufacture alone with the cost abroad, we have a striking contrast in the wages paid. From the best information we can obtain, after careful inquiry, we believe that these comparative costs of labor would be as follows:

	Europe.	United States.
Ordinary unskilled labor, per day.....	\$0.50 to \$0.60	\$1.80 to \$2.00
Skilled labor, per day.....	.80 to 1.00	2.50 to 3.50

We understand that foreign blast furnace ferrosilicon (of 10 per cent. silicon content) is being offered at the present time at New York and at Philadelphia on a basis of \$22.50 per ton, duty paid. The average cost of making our 10 per cent. grade during the last four years has been about \$21.50 per ton at furnace (in the Hocking Valley), which, with freight added, means \$25.20 at New York and \$24.80 at Philadelphia, without figuring in any profit whatever. In other words, the foreign manufacturers can pay \$4 per ton duty and sell their products here at from \$2.70 to \$2.30 per ton less than our cost price, without including in such cost any profit whatever for us. The following tabulation shows this clearly:

Our average cost for the last four years for putting down 10 per cent. ferrosilicon in Philadelphia, without any allowance whatever for profit.....	\$24.80
Foreign value of imported 10 per cent. ferrosilicon per ton, say.....	\$16.75
Expenses for freight, brokerage, &c., about 10 per cent., say.....	1.75
Duty at \$4 per ton.....	4.00
Selling price of imported ferrosilicon at Philadelphia....	22.50
Advantage to foreigners.....	\$2.30

To put us on equal basis in that territory with the foreigner, even without any profit to ourselves, we need a duty of \$6.30 on 10 per cent. ferrosilicon, which, on the basis of the foreign value, would equal about 37½ per cent. And if we regard territory somewhat nearer our furnace, as for instance, between Philadelphia and Pittsburgh, we need a protection of 30 per cent. to 35 per cent.

It is true that there have been times when we have been obliged to make sales at below cost to hold our trade or to get rid of a surplus stock, and about the only times when we can get into the Eastern market are those when the foreign supply happens to be short while there is a local demand for immediate delivery. But the situation is summed up when we say that at the present time we have been practically driven out of the Eastern market and cannot compete profitably in the Pittsburgh territory.

We do not ask for the required protection on the ground that ours is an infant industry needing encouragement, but on the ground that it is an old industry threatened with extinction. Only a few years ago there were in the Hocking Valley seven or eight blast furnaces making silicious iron. To-day our company is the only one left, and even we for a long period have been unable to keep our furnace in steady operation, while at the same time the importers have been bringing over and selling the foreign product. Possibly our industry might have been able to maintain itself on the present duty if conditions of manufacture had not changed so tremendously, but as it is now there is no hope for us except in a change of the tariff.

We do not wish to object to the electric furnace manufacturers receiving proper protection, but we do firmly believe that manufacturers of blast furnace ferrosilicon should also receive due consideration in the tariff, and we beg that the same may be accorded us.

We therefore ask that you remove ferrosilicon from paragraph 122 in the tariff and put it in paragraph 183 with other ferroalloys (except ferromanganese, as to which the facts are very different and in which we are not interested). We also ask that you insert in paragraph 183, in order to prevent any doubt of the intention of Congress, some such words as "whether produced in electric furnace, in blast furnace, or by chemical process, or otherwise." As to the rate of duty, as before pointed out, we need a protection of about 37½ per cent. ad valorem (on the foreign value) to compete (even without reckoning profit to us) with the foreign product at the seaboard, though possibly 30 or 35 per cent. ad valorem would enable us to compete in the Pittsburgh territory.

Statement of the Northern Iron Company, Philadelphia, Pa.

We wish to place before your committee a few facts concerning the duty upon a certain quality of pig iron upon which, like all other pig iron, an import duty of \$4 per ton

is imposed. This pig iron is used in making steel with the surface blown converter and analyzes as follows:

	Per cent.
Silicon	2.25 to 3.50
Manganese	0.50 to 0.90
Carbon	3.00 to 4.50
Sulphur	0.03 to 0.04
Phosphorus	0.03 to 0.04

This iron is very scarce in the United States, the production small, the price high and is confined principally in the hands of one house. This quality of iron could be imported from England at a reasonable price, lower than the American quality even with the addition of freight charges.

For the past 12 years we have been engaged in the business of putting up plants for making steel by the converter process, and though we may have been able to develop it successfully to a certain degree, yet its wider extension has been very much hindered by the high price of the required pig iron. We have made efforts with several furnacemen to make this so-called "silicon iron," but the demand for iron used in the open hearth process is so great that no one cares to divert from his regular work.

By lowering or suppressing the duty on this high silicon iron you will not hurt any existing furnaces, as they do not make this brand of iron, and you will benefit all the industries mentioned.

We respectfully beg to state that these statements are untrue. This so-called silicon pig iron is what is known in the trade as low phosphorus pig iron. It does not differ in any respect from pig iron used in the open hearth acid furnaces, excepting that the silicon is somewhat higher. The open hearth furnaces use iron usually with silicon from 1 to 2 per cent. The Tropenau converter, represented by Colne & Co., requires iron with silicon from 2.25 to 3.50 per cent. The same furnaces which make the open hearth iron produce the so-called silicon iron. It is not true that only one house is interested in this matter. This iron has been produced during the past few years by the following concerns:

Northern Iron Company, Standish, N. Y.
 Empire Steel & Iron Company, Catawissa, Pa.
 Bethlehem Steel Company, Bethlehem, Pa.
 Pennsylvania Steel Company, Steelton, Pa.
 Carbon Iron & Steel Company, Parryville, Pa.
 R. Heckscher & Sons Company, Swedeland, Pa.
 Carnegie Steel Company, Pittsburgh, Pa.
 Cambria Steel Company, Johnstown, Pa.
 Stewart Iron Company, Cleveland, Ohio.
 Cranberry Furnace Company, Johnson City, Tenn.

There has been no period during the past 20 years when an abundant supply of this iron has not been available from at least three to six of these furnace companies. More of the iron would have been produced had the demand called for it. Any discrimination in duty on this so-called silicon iron would be a distinct blow at the capital and labor interested in the manufacture of low phosphorus pig iron, and would be an injustice to users of low phosphorus iron by the acid open hearth process.

SCRAP IRON AND STEEL BILLETS.

Statement of the Portland Iron & Steel Company, Portland, Maine.

We write you in the interest of an industry which we are operating at Portland, Maine. We have a rolling mill which employs about 300 men, turning out a product of merchant bar iron which we distribute to the railroads and jobbers in the New England States.

The raw material which we use is entirely wrought scrap iron. There is a present import duty of \$4 per ton on this material coming into the United States. Canada is close to us, with the Grand Trunk Railroad running into the city of Portland. We have a dock at our mill, with tidewater, where we can discharge our coal vessels from Philadelphia on low rates of freight.

We feel that the duty on scrap iron should be taken off to enable us to buy this material from Canada and other foreign countries.

Large quantities of this material are shipped into Pennsylvania which are used by the mills making the same product that we do, and the quantity produced during the year has been less than heretofore on account of the depression in business; and we find that market advancing now so that the profit on our manufactured product is seriously affected. If we had another source of supply where we could import scrap, we would be better off than we are to-day.

One other product which we advocate a radical reduction on is steel billets. Situated as we are on tidewater with our mills, we feel that lower duty on billets, or none at all, would give our industry in New England a great advantage over what it now has. We are obliged to pay the makers of open hearth billets in Pennsylvania almost the price of the finished product of steel bars, which prohibits our using steel billets to reroll into soft steel bars for our trade in New England. We are well equipped to roll this material and feel that this industry should be supported and prospered.

We have an up to date, well equipped plant, equal to any first-class Pennsylvania mill turning out the same product, and all we ask is an equal chance with Pennsylvania mills to make the same product and sell it in New England.

STEEL BARS AND BILLETS.

Statement of John O. Pew of the Youngstown Iron & Steel Roofing Company, Youngstown, Ohio.

The plant with which I am connected is located in Youngstown, Ohio, and has an output of about 30,000 tons per annum. It produces sheet steel from sheet steel bars or slabs. The sheet bar or slab mentioned in section 135 is our raw material, and I am led to make these suggestions by feeling that the committee might be misled by the fact that the word "bars" in the iron trade is used in two distinct senses. The merchant bar made of steel, the round and the finished steel product which corresponds with the bar iron mentioned in section 123, is separate and distinct from the steel bars in which we take an interest, because they are our raw material, and we feel that the sheet bar is an unfortunate name for that form of billet, which is essentially a billet and should not be called a bar, because it is so distinct and separate and different from the finished bar iron or bar steel that to call both things by the same name may lead to an error in the framing of your bill that would be exceedingly disastrous to the manufacturers of sheet steel and tin plate.

The steel bars which we buy and roll down into the finished sheets would be more properly styled a billet than a bar, but in the trade they are known as sheet bars, and should not be carried in the same schedule as the finished bar steel. The cost of producing sheet bars of steel is about 30 cents a ton more than the steel billet. The difference in cost and real value is so slight that the billet and the sheet bar should, in our judgment, carry the same tariff duty. We are anxious that no mistake be made in the adjusting of this duty.

Briefly, I wish to say that I believe that a careful but not a radical reduction may be made without serious injury to all the iron schedules. We are paying high wages, and a radical reduction in the protection that we have at present under the Dingley bill would make it necessary for us to quit business or to reduce wages.

We think that section 135, in its classification, is open to a very serious criticism. The several kinds of steel therein mentioned are classified according to their value in the market. This, it seems to us, ought to be changed to a specific duty that would remain uniform and not go higher if the price of steel should rapidly rise in our market.

It seems that there is no reason why the duty should also be increased by the mere fact that the market value of the steel itself should go from 1 cent a pound to 1.4 cents a pound. The effort in the Dingley bill manifestly was to charge a higher duty for those products upon which a greater amount of labor had been expended, and this was right. The new bill, we think, should do the same thing, but it seems to us that it might be done in a more scientific way. The bloom, the slab and the sheet bar are all essentially the same thing and cannot differ much in cost of production. It is possible, however, that some influence might raise the price of the sheet bar in our market until it would go to \$30 per ton, while at the same time the price of billets would remain as it is at practically \$24 per ton. Under the classification that exists now in section 135 the tariff on the bars would, by a mere change in the quotations of market value, be advanced \$4 per ton at a time when, owing to the scarcity of sheet bars in this country, it would be exceedingly disastrous to the sheet mill industry, making the increasing rise a barrier against relief through importations from abroad at a time when the tariff ought to be lower and not higher; and in the making of the new rates of duty, if it is thought wise by the committee to change this schedule, it is suggested that the prices of these different articles be ascertained as they exist at present, and that as nearly as possible a specific duty be made and omit the ad valorem classification which is now in this section.

STEEL RAILS.

Statement of E. C. Felton, President Pennsylvania Steel Company, Philadelphia, Pa.

For the manufacturer whose works are located near the seaboard the present rate of duty is none too high to give the protection necessary to enable him to make a reasonable profit on his investment and at the same time pay his labor such wages as the present scale of living in this country demands. The competition of foreign rail manufacturers reaches him first; works located in the interior having a natural protection because of the freight which must be paid on foreign rails coming into their market, while he not only has no such protection but because his market is along the seacoast must pay in freights to reach his points of delivery an amount often equal to or in excess of that paid by the foreign manufacturer to reach the same points.

To illustrate. The works of the Maryland Steel Company are located at Sparrows Point, on the Patapsco River, near Baltimore. Its market is along the Atlantic and Gulf seaboard and on the Pacific Coast of the United States. To reach a considerable part of the market, notably the Gulf of Mexico points and more especially the Pacific Coast, this company must pay in freights an amount equal to or in excess of that paid by the foreign mills shipping to the same points.

The equipment of the Maryland Steel Company's plant is modern and was designed with special regard to the economical manufacture of steel rails. Its location on the sea-coast is favorable to its engaging in the export business, and this it has done to a large extent. At the low prices received for exported rails a book loss has been shown, but it is felt that the business as a whole has been advantageous, since the foreign orders taken have allowed of the steady and regular operation of the mills and so cheapened the entire output of the plant, besides permitting the fixed charges to be distributed over a larger tonnage.

The following table gives for the 10 years 1898 to 1907, inclusive, the average prices received per ton, f.o.b. mill, for rails sold in domestic and foreign markets:

Year.	Domestic.	Foreign.	Average.
1898.....	\$19.44	\$17.61	\$18.72
1899.....	22.42	18.64	21.04
1900.....	29.78	26.06	28.00
1901.....	25.84	22.46	25.12
1902.....	27.72	22.17	27.46
1903.....	27.92	..	27.92
1904.....	27.44	17.98	22.76
1905.....	27.66	20.79	25.96
1906.....	27.93	23.42	27.33
1907.....	28.08	27.52	28.02
Average.....	\$27.13	\$21.43	\$25.89

During the 10 years the Maryland Steel Company sold an average of 76.42 per cent. of its product in the domestic market and exported 23.58 per cent., the proportion sold abroad varying from nothing to about 50 per cent. in different years.

The profit per ton during this same period on this business, after deducting all fixed charges, but without charging off anything for general depreciation, is as follows: 1898, \$1.136; 1899, \$1.199; 1900, \$1.643; 1901, \$2.011; 1902, \$2.880; 1903, \$1.644; 1904, \$1.745; 1905, \$3.718; 1906, \$3.280; 1907, \$1.664; average, 10 years, \$2.133.

During these years an average of 52.8 cents per ton was charged off to depreciation, leaving the net profits available for dividends and plant additions and extensions \$1.605 per ton of rails. It is impossible to determine with absolute accuracy the comparative costs of rails made for the foreign and domestic markets, since both are often produced concurrently and the cost items cannot be separated. A careful estimate has been made, however, by crediting to the costs of exported rails all rebates received from imported materials, such as iron ore, pig iron and spiegeleisen used in their manufacture, but not crediting the incidental advantages coming from steady, regular operation, the spreading of fixed charges over a larger output, &c. This estimate shows that for the above period of 10 years the exported rails show a book loss of \$1.489 per ton and the domestic rails a profit of \$3.138, and after deducting the 52.8 cents charged to general depreciation, a loss of \$2.017 and a profit of \$2.610 per ton, respectively.

The net cost of rails during this same period, before deducting anything for general depreciation, was as follows: 1898, \$19.856; 1899, \$19.841; 1900, \$26.357; 1901, \$23.109; 1902, \$24.580; 1903, \$26.276; 1904, \$21.015; 1905, \$22.242; 1906, \$24.05; 1907, \$26.356.

Much has been said in the public prints about the low costs at which rails could be made in the United States. These statements were true in the period between 1895 and 1900. The low costs have, however, permanently disappeared in the last 10 years, as is indicated in the above table, which shows an increase of \$6.50 in that time. This increased cost has been brought about by higher wages paid to labor, higher freight rates and higher costs of raw material. The higher wages paid to labor have been largely offset by improved machinery, but the higher freight rates and higher costs of raw material are, it is believed, permanent elements of cost, which must always be considered in the future.

While the prices of raw materials have fluctuated widely in the past, the present level, or higher, will undoubtedly be maintained in the future, as a result of the withdrawal from the open market of many of the most important sources of supply through their acquisition by owners who reserve them for their own purposes.

In the 10 years considered the average price obtained for rails at Sparrows Point was \$25.89 per ton, showing a profit of \$2.13 per ton, or, after depreciation had been charged off, of \$1.60 per ton. The costs had advanced in this period from \$19.85 to \$26.35 per ton, or \$6.50 per ton.

Let us consider not the profit per ton, but the return on the capital employed, and let us take not the whole period, but the two most profitable years—1905 and 1906.

The total amount employed in those years in plant and property, materials on hand and working capital was, approximately, \$10,500,000. The average profit per year without depreciation was as follows:

	Amount.	Per cent. on \$10,500,000 capital employed.
Gross profit.....	\$1,369,602	13.08
Less interest on bonded indebtedness.....	182,137	1.74
Net income.....	\$1,187,465	11.34

From the net income a charge for depreciation averaging \$652,799 each year was made, leaving a net profit of 5.09 per cent.

As the Maryland Steel Company, whose figures are those given, is a subsidiary company of the Pennsylvania Steel Company, which owns other companies engaged in similar and related lines of business directly concerned with steel manufacture, a diversion of profits legitimately arising from the operations of the Maryland Steel Company might appear to have been made to those other companies and the true state of affairs concealed. The total amount employed in all the companies owned by the Pennsylvania Steel Company (and these companies are all engaged in the line of business connected directly with steel and iron making, such as ore and coal mining, transportation and the manufacture of many kinds of steel products besides rails) was approximately \$50,000,000.

The average aggregate profits of these companies (including the Maryland Steel Company) for 1905 and 1906 were as follows:

	Amount.	Per cent. on \$50,000,000 capital employed.
Gross profit.....	\$5,420,117	10.79
Less interest on bonded indebtedness.....	748,313	1.49
Net income.....	\$4,671,804	9.30

From the net income a charge of depreciation, averaging \$1,572,787 each year, was made, leaving a net profit of 6.2 per cent.

It will be seen from these figures that the percentage of profit made by the Maryland Steel Company (which is a manufacturing company only) is somewhat in excess of that made by the combined companies, and that no misrepresentation has been made, either knowingly or unintentionally, in the figures presented.

To again summarize. On the capital investment in rail manufacture the Maryland Steel Company has earned yearly in the two best years of the last 10 years 11.34 per cent. It is submitted that an average profit during the last 10 years of \$2.13 per ton on rails and a return of 11.34 per cent. before charging off any amount for depreciation, during the two most profitable years of that period, on the capital invested is not unreasonable or excessive.

Any reduction in the present duty will bring about a reduction in the price at which rails sell along the seaboard and will reduce or wipe out the existing margin of profit. The present rate is not higher than necessary to prevent the dumping in this country of surplus of foreign manufacturers, and that it has not resulted in exorbitant profits or unreasonable prices to American railroads is shown by the foregoing statements and by available records of prices in the steel producing countries of Europe. It is therefore asked that no change be made in the existing duty of \$7.84 per ton on rails unless a corresponding reduction is made in the duties on the materials which enter into the manufacture of rails—namely, iron ore, pig iron, spiegeleisen and ferromanganese.

While the figures presented apply only to the operations of the Maryland Steel Company, they are believed to represent substantially those of other American rail manufacturers.

ABRASIVES OF IRON.

Statement of the Calais Shop Works, Calais, Maine.

Ten years ago we started at Calais, Maine, a plant to make chilled shot for use in granite mills here and elsewhere. We have been in competition chiefly with foreign manufacturers, and feel that in revising the tariff it should be changed from an ad valorem duty of 45 per cent. to a specific duty of not less than 1 cent per pound on all sizes of chilled shot. We have carried on our business in a most economical manner and have not in the 10 years been able to get a profit of 6 per cent. a year on our investment, leaving out all allowance for depreciation of plant.

The foreign makers get pig iron for \$13.40, which costs us \$23. A reduction in duty on pig iron would not help us, as it would only be added to the foreign price to us. The foreign freights to New York are about \$3.23, against \$5 from Calais.

We do not know the comparative wages in Scotland and here. We do know, however, that in 10 years of hard work we have been constantly facing a foreign competition which has kept our prices down below a fair business profit, and this has been especially true of small sized shot, which has been imported and sold as low as \$25 a ton of 2240 lb., and this is below cost here.

The duty should apply to all sizes of shot and should be specific duty, as in the past the valuations have been such that the price has been forced down to less than the actual cost to us on small sizes.

In 1904 an effort was made by the foreign manufacturers to combine the American makers with them and regulate prices. We declined to do this, and we think we ought to have the tariff protection.

STEEL WIRE.

Statement of Julius Breckwoldt & Co., Dolgeville, N. Y.

I have been interested in the importation of the Rudolf Giese steel music wire, manufactured at Westig, Germany, for the past 10 years.

I do not know what measures will be taken by Congress on the tariff question, but generally speaking it looks as if there would be a revision. The American steel trust has cut a great inroad in the business and is doing its utmost to drive us out of the market. As you will see by the enclosed copy of letter that it is selling spring wire at 22 cents per pound, and it costs us 28 cents to import this wire. You are aware that I am a strong protectionist, out and out, but at the same time I would like to have justice done all around, and believe that the tariff on cast steel music wire and spring wire should be reduced. The manufacturers in this country can never produce wire of such high standard as that produced by foreigners, as it requires the best Swedish steel to make it. Our manufacturers are, so to say, imitators, and it will be a great many years to come before they have the results achieved by the foreign manufacturers.

Furthermore, the extent of the piano business, as well as other lines of manufacturing where these wires are used in this country, is so large and there is so much capital invested that it means a great help to them if they can get the right wire at the right price. It would be detrimental to these industries if they were forced to take inferior goods, which would be largely the case should the American Steel & Wire Company drive us out of the market. You can judge from the letter which our agent sends us that it is doing everything in its power to cut into the market. Even if it is not entirely successful in so doing, it compels us to cut the price, and if this state of affairs continues it will discourage us.

Knowing that you have our interests at heart, I wish, if there is cause for it, that you would look after this matter for us and see if you can get the duty reduced. At present we are paying 45 per cent., which is altogether too much protection for the combine; 30 per cent. would give us a fighting chance to keep it off. Three or four years ago its influence went so far that we had to add market value to our invoices, notwithstanding the proof of the consular agent in Europe that we entered our goods at the true market value.

HORSESHOE CALKS.

Statement of the H-Calk Company, New York City.

We are engaged in the importation of horseshoe calks, for which there is no specific provision in the tariff act of 1897, and which have been assessed with duty under the general provision for manufactures of metal in paragraph 193, schedule C, at the rate of 45 per cent. ad valorem, and we desire to submit for the consideration of your committee certain statements of fact and reasons which we believe will convince you that the articles are entitled to a lower rate of duty than that under which they are at present assessed.

On Wednesday, November 25, 1908, Warren R. Chase, representing the Sterling Mfg. Company, Hartford, Conn., appeared before your committee and made application for an increase in the rate of duty covering these goods in the tariff act now in the course of preparation. There are certain statements made by Mr. Chase to which we wish to take exception, as we deem them inaccurate, to say the least. Mr. Chase is reported as saying that "at the present time there are four different manufacturers in the United States, having an invested capital of about \$1,250,000 and employing about 400 hands. Their annual product is from about \$1,000,000 to \$1,200,000."

We have ascertained from reliable sources that the capital invested by the Neverslip Mfg. Company, New Brunswick, N. J.; Williams Drop Forging Company, Scranton, Pa.; Sterling Mfg. Company, Hartford, Conn., and American Calk Company, Detroit, Mich., which concerns manufacture practically all of the horseshoe calks produced in this country, is not more than \$350,000 in the aggregate, and their total output, based upon the selling price to the jobbers, is not more than \$500,000 per annum.

Mr. Chase has stated that his selling price is \$26 per 1000, whereas we know positively that he has sold during the years 1907 and 1908 all his product to the H & Rowe Calk Company of New York and the H & Rowe Calk Company of Hartford, Conn., on the basis of from \$11 to \$13.50 per 1000 for the $\frac{1}{2}$ -in. calks, which are the average size of calk and are the size to which he refers throughout his argument. He states that during the last year (presumably 1907) there were from \$20,000 to \$25,000 in value imported. For the further information of the committee, we desire to state that within the past three years horseshoe calks of the value of \$52,000 have been imported, as follows: Maldonado & Co., H-Calk Company and H & Rowe Calk Company, \$43,000; Neverslip Mfg. Company, \$7500, and others less than \$1500. Of this amount, approximately, \$8000 have been exported to Canada, and there are \$6000 worth still in bonded warehouses, leaving a balance of, say, \$38,000 foreign product consumed in this country.

The witness takes no account of the fact that of all the importations only 23 per cent. are what are known as steel center calks, which are the same design as those manufactured in this country, and that the balance—namely, 77 per cent.—of the importations are what are known as H calks, so called because the sharpened end which prevents the horse from slipping is in the form of a letter H, and which have never been made in the United States, and therefore cannot be said to come in competition with the domestic product.

The first steel center calks were imported in 1907 and were made especially for the Sterling Mfg. Company according to samples furnished by them, and they agreed to purchase 1,000,000 calks in 1907 and 2,000,000 calks in 1908 at a duty paid price landed in New York of \$11.50 per 1000, and these are the calks which the witness refers to as being offered at \$15 per 1000 throughout the country. The Sterling Mfg. Company rejected these calks on the ground that they did not accord with the specifications—to wit, to be in every way up to the quality of the sample of domestic calks submitted to the German manufacturers when the order was placed—and we can draw no other conclusion from its refusal to accept delivery than that it could manufacture them in this country of an equal quality at considerably less than the equivalent of the duty paid price of \$11.50 per 1000.

The horseshoe calk business in this country is practically controlled by the Neverslip Mfg. Company, which produces approximately 85 per cent. of the domestic product and which actually fixes the selling price to jobbers and consumers, and which, we understand, is now negotiating with the Sterling Mfg. Company to take over its business.

The consumption of the imported article during the past three years, outside of those exported to Canada, has been approximately 3,000,000 calks, and if this be compared with the consumption reported by the Sterling Mfg. Company of 40,000,000 to 50,000,000 calks per annum it will be seen that the domestic interests already control 98 per cent. of the market in this country for this merchandise. If we take the statement of Mr. Chase, that about \$2,000 to \$25,000 was imported last year, and figuring on the $\frac{1}{2}$ -in. calk at a value of, say, \$11.50 per 1000, which would be equivalent to 2,000,000 calks, and take also his statement that 40,000,000 to 50,000,000 are sold in this country annually, it will be seen that from his own figures the domestic interests have control of approximately 95 per cent. of the consumption of this country.

An equitable specific duty would be, say, $2\frac{1}{2}$ cents per pound, which would be sufficient to offset any difference in the cost of production in Germany and this country, and which would therefore allow both the domestic and importing interests a fair opportunity to develop this business.

If your committee is not disposed to specifically enumerate horseshoe calks in the new tariff act, we submit that the foregoing statements as to the difference in the cost of production, because of lower rates of duty that may be granted on the imported material, apply with equal force to all manufactures of metal, and we therefore suggest that if these articles are to be classified under such a general provision said provision should be at a rate of not more than 25 per cent. ad valorem.

MACHINERY.

Statement of the Binsse Machine Company, Newark, N. J.

Referring to the proposed tariff revision, I urge as a matter of great importance a reduction from the present [machinery] tariff to 25 per cent. or perhaps even 20 per cent., because:

1. The existing duty is unnecessarily high and one of 25 per cent. would cover our needs amply.

2. The 45 per cent. duty, which far exceeds that of any other country, has worked great injury to our interests by provoking retaliatory duties, and further injury is in sight by additional increases in France and elsewhere.

The United States has always led in machinery products. In every branch of this industry American machinery is the standard throughout the world. The exceptions are so few that they merely emphasize the rule. Therefore all we require is duty enough to offset the difference in the price of labor, and for this 25 per cent. is ample.

The importance of the foreign trade may be estimated by the fact that it saved at least 75 per cent. of our machinery manufacturers from bankruptcy during the panic period following the year 1893.

We could have a large part of the machinery trade of the world were it not for hostile tariffs.

Between 1893 and 1900 the United States sold machinery amounting to many millions to Europe. The merit of our product was quickly noticed in Germany, where the machine tool builders at once began to copy our designs and methods. This led to a great development in the German machine tool trade. Germany now has the most energetic machinery houses in the world, covering every country with their salesmen and branch offices.

About 1901 the German machinery manufacturers petitioned for an increase of duties. This was granted, and to-

day the German exports of machinery have grown to great importance and they have taken from us business which should be ours. In Canada, which should be an excellent field for American industry, our export trade has been almost wiped out by a retaliatory duty.

A general increase of foreign tariffs to 25 per cent. would destroy the export of American machinery to Europe, as it has practically destroyed our Canadian trade. In keeping our tariff at 45 per cent. we are giving our commercial opponents the strongest possible argument for a tariff against our products. We cannot consistently appeal against a German or a French tariff when our own is about three times theirs.

It is possible that this proposed reduction may not please a very small minority (about 5 per cent.) of our manufacturers of machinery, as it is understood by those who have given attention to the subject that the tariff of 45 per cent. was created, not for the purpose of protecting American manufacturers in general, but with the intention of preventing the reimportation of American machinery by a very few large companies which, although they are seemingly competitors, are in fact banded together as to prices. By this arrangement and by means of the tariff they can and do exact a profit from our citizens of about 30 per cent. over what they sell their goods for in competition in Europe. The tariff prevents their product sold in Europe from being reimported into the United States.

Any one who will study carefully and without prejudice the United States customs requirements for the reimportation of American machinery will find the strongest evidence that this is so.

I advocate strongly a maximum and minimum rate, and also the appointment of a commission of experts to draw up a scientifically made tariff, one that will be a benefit to the consumer as well as the honest manufacturer.

MACHINE TOOLS.

Statement of the Warner & Swasey Company, Cleveland, Ohio.

The manufacturers throughout the country are greatly interested in the work that your committee is doing just at this time, and while we are presuming that most of the letters you receive strongly advise high tariff, it is our pleasure as manufacturers of machine tools to state that the facilities for manufacturing in this country are so fully developed that we feel it would be greatly to our advantage to have the tariff on machinery and machine tools reduced, for by that means a strong argument would be in the hands of our Government against the raising of tariffs in foreign countries.

Just now we are threatened with threats of higher tariff on machines sent to France, and probably similar changes will be made in German tariffs in the very near future. We strongly favor reciprocity along these lines and do not fear competition. We are in favor of a minimum tariff being established with countries that will favor us. The tariff for this purpose might be reduced to 30 per cent., or even 25 per cent., and we feel that the American manufacturers would then receive protection enough. In fact, our high tariff of 45 per cent. is absolutely prohibitory, and therefore our Government receives nothing in the way of a revenue from this source.

We realize the importance of the work you are doing and the great amount of labor incident thereto, but trusting that you welcome suggestions from others, we have been bold enough to write you this letter.

Statement of the Bullard Machine Tool Company, Bridgeport, Conn.

There is, as you are doubtless aware, a movement of considerable volume on foot among all builders of machine tools looking toward a reduction of the tariff on that particular product.

We have had an opportunity to discuss this matter fully, and beg to state that in our opinion the present duty of 45 per cent. ad valorem is decidedly excessive and has in the past worked us more harm than good because of the retaliatory measures which have been directed at the American exporters by foreign governments.

Our foreign business has been practically 30 per cent. of our total volume, and had it not been for the above retaliatory tariffs it would have been, in our opinion, a far greater proportion of a greater total.

Our sales to France, one of our best customers heretofore, are now threatened with a material reduction, owing to the added handicap in the proposed French increase in duty on American machinery, which increase is admittedly a slap at our own duty of 45 per cent. on all classes of machinery, which directly affects the exportation of French automobiles. If the present duty is maintained we fear the eventual discontinuance of our foreign trade, and trust, therefore, that material reductions will be made.

The position which American machine tool builders hold to-day in the markets of the world is solely one of superiority in design and workmanship, and it is our earnest belief that should the tariff on our particular line—namely, boring and turning mills—be entirely wiped out we would have noth-

ing whatever to fear in the way of foreign competition in this country. This may not, however, apply to all lines of machinery or all lines of metal manufacture.

We also believe that in order to obtain a reduction in the tariffs which have already been enacted by foreign countries there should be a maximum and minimum tariff which would form a basis for reciprocal arrangements. A minimum of 10 per cent. we believe to be sufficient to thoroughly protect all lines of machine tools, and that the maximum should not exceed 25 to 30 per cent., the difference between the maximum and minimum to be used solely for the purpose of reducing tariffs by reciprocal measures already directed against our product in foreign countries.

GAUGES FOR TESTING MACHINES.

Statement of the Gisholt Machine Company, Madison, Wis.

[The Hendey Machine Company, Torrington, Conn., has filed with the committee, through Representative Hill of Connecticut, the following communication regarding the tariff on gauges brought into the United States for testing machines intended for export, which it has received from the Gisholt Machine Company:]

You, no doubt, have had some experience in trying to get through the customs house sample pieces sent from across the water to be used for the purpose of testing our machines. We have had considerable of this, and it has always been necessary to pay duty on these samples, although in many cases the samples are defective pieces and sent here simply to enable us to determine whether or not special tools are made exactly right to accomplish the desired results. Not only is it necessary to pay duty on these samples, but no way has been found by which the duty would be refunded in case the samples were returned to the original owner. In other words, it is necessary for the foreign consumer to pay for the privilege of dealing with the American manufacturer by paying duty on something that is of absolutely no value except to the purchaser, and which, in most instances, could not possibly be made use of here in this country.

We had an extremely aggravated case lately, when we were sent a number of gauges to be used for testing tools, and, doubtless for insurance purposes, our customer placed a value of \$450 on these gauges, which, of course, were valuable to him, but of absolutely no value to any one else. There seemed to be no way to get these into this country without paying a duty of approximately \$200, and if this duty had been paid no refund could have been obtained. Therefore we found it necessary to have the gauges returned, we taking the chances that our tools would be so nearly right that our expert, when it comes to starting up the machine (which is to go to France) will be able to make any necessary changes.

This matter of paying duty on parts sent here for the purpose of testing machines has been one that many manufacturers have been up against, and you can well imagine that it is very aggravating for the foreign customer to be charged with the cost of duty on such articles as mentioned. In order to guard against dishonest practices it might be necessary to collect the duty, but provision should be made whereby this duty could be refunded in case the parts were returned to the country from which they came.

BICYCLES.

Brief of American Manufacturers of Bicycles.

We represent the following bicycle manufacturers of the United States: Consolidated Mfg. Company, Toledo, Ohio; Emblem Mfg. Company, Angola, N. Y.; Great Western Mfg. Company, Laporte, Ind.; Pierce Cycle Company, Buffalo, N. Y.; Pope Mfg. Company, Hartford, Conn.; also the signers to this brief and by authority given in telegrams and letters herewith attached, from Arnold Schwinn & Co., Chicago, Ill.; Snyder Mfg. Company, Little Falls, N. Y.; National Cycle Company, Bay City, Mich.; Iver Johnson Arms & Cycle Company, Fitchburg, Mass.; Miami Cycle Mfg. Company, Middletown, Ohio; Toledo Metal Wheel Company, Toledo, Ohio; Gendron Wheel Company, Toledo, Ohio; Excelsior Motor & Mfg. Company, Chicago, Ill. These corporations produce more than 90 per cent. of the bicycles manufactured in the United States.

We beg leave to present to your notice the decline in the industry of the manufacturing of foot propelled bicycles and tricycles and parts thereof in the United States, as shown in Bulletin No. 66, Census of Manufactures, 1905:

Census of Automobiles and Bicycles and Tricycles.

	1900.	1905.
Factories	312	101
Capital	\$29,783,659	\$5,883,458
Total wages.....	\$8,189,817	\$1,971,403
Value of bicycles.....	\$23,689,437	\$4,109,429
Bicycles	1,182,850	252,923
Average value.....	\$20.03	\$16.25

While there are no statistics available since the census of 1905, it is a fact that the number of bicycles manufactured has not increased, nor has there been any advance in the selling prices since that time.

We beg leave to call your attention to the great decrease

in the value of bicycles and bicycle parts exported from the United States since 1897 and to the great increase in exports from England and Germany in the same period:

	<i>Bicycle Exports.—United States, England and Germany.</i>	United States.	England.	Germany.
1897.....	\$6,902,736	\$6,937,052	*	
1898.....	7,092,197	4,660,554	*	
1899.....	4,820,284	3,227,025	*	
1900.....	3,061,061	2,573,361	*	
1901.....	2,599,237	2,800,448	*	
1902.....	2,581,255	3,482,479	\$3,600,250	
1903.....	2,099,092	*	4,639,250	
1904.....	1,621,820	*	5,028,000	
1905.....	1,320,496	4,727,000	6,948,250	
1906.....	1,404,546	*	*	
1907.....	1,082,727	‡4,843,325	†10,172,000	
1908.....	\$604,583	‡5,260,925	†7,846,250	

* No statistics available. † For six months only. ‡ Nine months. § For ten months only.

Practically during these years no bicycles of foreign manufacture have been imported into the United States.

It will be seen, therefore, that the export trade in bicycles and bicycle parts has diminished to an extent that nearly takes it from the list of exports, while during the same periods the export trade of European countries, notably England and Germany, has increased.

Until about 1902 the United States could fairly compete in the sale of bicycles in all the markets of the world with England and Germany, the advantage of improved and labor saving machinery largely offsetting the extremely low wages paid in European countries as compared with those paid in the United States. But English and German shops are now equipped with the most modern machinery—much of it of American makes—and the competition between Europe and the United States to-day as affecting costs of production is in wages, and this competition in wages applies not only to the labor expended directly on the bicycle but to the costs of materials used and to the expenses in the marketing of the bicycles.

The American manufacturers have tried to meet these conditions and maintain a fair competition, but they have apparently gone as far as they can. Even a moderate reduction in the tariff would without question invite shipments from England and Germany to this country, with the result of a further if not total decline in our industry or the other alternative of forcing European wages upon American workmen.

Now, shall we open the doors to the foreign manufacturers or reduce the wages of American workmen to meet this competition?

There are engaged in the manufacture of bicycles and bicycle parts 5000 men, and in the retail sale about 8400 more, all of whom are dependent on the bicycle industry for the livelihood of themselves and their families.

The estimated wages paid 2500 bicycle factory employees, 2500 bicycle parts factory employees, 8400 bicycle dealers and repair men, total, 13,400, at a conservative average of \$2 per diem for 250 days per annum, makes a distribution in payrolls amounting to \$6,700,000.

Bicycle manufacturers have no desire for special treatment or an unfair rate of tariff, but with the prices on most material and lower wages paid in Europe, as compared with said cost of labor and material in the United States, the present rate of 45 per cent. is only fair protection.

We further petition that the present rate of tariff be maintained and that bicycles and tricycles and parts of same be classified as such.

CUTLERY.

Statement of Representative Thomas W. Bradley of Walden, N. Y., Relative to Evasions of Section 8 of Dingley Act.

[Representative Thomas W. Bradley of Walden, N. Y., has filed with the Ways and Means Committee a statement in which he makes serious charges against certain importers of foreign cutlery, particularly German products, which he alleges are annually brought into the United States in very large quantities, the stamps indicating the country of origin removed and the goods sold as of domestic manufacture. The letter in question was originally prepared for submission to the Secretary of the Treasury, but in view of the pending revision of the Dingley act Mr. Bradley has also filed it with the Ways and Means Committee. It is in part as follows:]

In connection with outrageous evasion of section 8, tariff law of 1897, I have the honor to file complaint and charges, as follows:

The law providing that all imported goods shall bear the name of the country of origin was first passed in connection with the McKinley tariff, and was based on a copy of the English law submitted by me to the Ways and Means Committee.

At the time our law was framed and until about 1900, the only method of stamping the firm name, trademark and country of origin on pocket knives and razors was by a steel stamp or die driven deep into the tang of the blade.

It is a matter of record that subsequent to October 9, 1890, imports of German knives were, in some cases, held up until the importer had caused the word "Germany" to

be stamped with a steel die on the blade tang of each knife, and this at the appraiser's stores, under the supervision of a customs employee; all this at the importer's expense. I mention this to show that stamping deep with a steel die was the manner in which German and English knives and razors were usually and ordinarily marked, both as to the name of country of origin, trademark and firm name, and that the department enforced the real intent of the law as covered by section 8 of the tariff law of 1897.

For some time, how long I cannot state, but for more than a year past, German knives and razors have been passed through the port of New York with the name of the country of origin wash stamped instead of stamped with steel die, and have also been passed with the word "Germany" in light etching so shallow as to be easily buffed off, the wash stamped name of "Germany" being merely a composition easily wiped off with a cloth moistened with benzine. Even the firm name on the front or "mark" side of the blade tang is treated in the same manner, so that both the name of the country of origin and the firm name may be easily removed and the knives and razors be then steel die stamped in this country with a name representing the product to be of American manufacture. The entire proceeding is a deliberate and carefully thought out scheme for evading the true intent of section 8, and of placing on the American market an inferior grade of German manufacture under the guise of a reputable American product.

Five hundred thousand dollars is a low estimate, in my judgment, of the amount of German wash stamped product imported, and evading the intent of section 8, during the year 1908. It can readily be understood that a continuance of this practice will steadily depreciate and eventually ruin the high standing of reputable American production.

I have not a dollar of interest in any manufacturing industry; but in my home town of Walden, N. Y., are three manufacturing plants, producing about 50 per cent. of the American output of pen and pocket knives. The people of my town depend on this territory, and I am deeply concerned for the welfare of these pocket knife operatives, whose highly skilled trade will be discredited and probably ruined if this nefarious evasion of the true intent of section 8 is permitted to continue. I therefore most earnestly request as follows:

1. That the attention of the appraiser at every United States port of entry be called to this evasion of section 8, tariff law of 1897, and instructed to refuse entry to all imported articles named in paragraph 153 of said law that do not strictly conform to the true intent of said section 8.

2. That appraisers be instructed to rule that the true intent of section 8, "Usually and ordinarily marked, stamped," &c., means stamped by steel die deep into the blade tang, and refers not only to the stamp of the name of the country of origin, but to the name of individual, firm, or corporation or trademark thereon.

3. If a department ruling in relation to section 8, as affecting all articles named in paragraph 153, has not been issued, that such ruling issue as promptly as practicable.

4. That if the department can consistently do so, I be given a legal opinion as to the erasing of foreign stamps, the restamping with intention to misrepresent and deceive, all as above referred to, and whether there be any Federal statute under which persons can be proceeded against, whether amendment to the Interstate Commerce law might be made to cover such cases, or whether action under the common law is the only recourse for the consumer or manufacturer injured by the kind of deception herein complained of.

Through the consideration of Sereno E. Payne, chairman, I am permitted to submit all points here mentioned to Thomas J. Doherty, assistant counsel United States Treasury Department, assigned to the Committee on Ways and Means, with a view of amending section 8, and protecting, so far as practicable, reputable American makers of pen and pocket knives and razors, and have submitted to Mr. Doherty certain exhibits of wash stamped pocket knives.

PIG IRON.

Statement of the Empire Steel & Iron Company, Catawba, Pa.

I cannot allow the recent communications on this subject you have received from other sources to pass by without comment on my part, for the statements made, if the reports shown by the trade papers are correct, are so misleading, from our way of thinking, that I feel compelled to encroach on your good nature by giving you my views in answer thereto.

First of all, I wish to touch on the statement made by Colne & Co. of New York, who claim that the present duty of \$4 per ton should be either considerably lowered or entirely abrogated on what they are pleased to call silicon iron, claiming that it is practically unprocureable in this country, the product being confined principally in the hands of one house, and that with the duty out of the way a supply sufficient for their needs could readily be secured from England at a lower price than the American quality, even after the addition of freight charges.

While the latter fact is admitted, I am obliged to disagree with their statement as to the manufacture of the product in America, for the metal is nothing more than ordinary iron, known in the trade as low phosphorus pig iron, and does not differ in any respect from iron used in our open hearth acid furnaces excepting in the matter of silicon, which is an element that is controlled entirely in the blast furnace and can be made high or low to meet the requirements of the trade.

The average requirements in silicon are from 1 to 2 per cent., but we have contracts on our books now calling for the same iron running from 2 to 3 per cent. in silicon, which percentage is sufficiently high for the so-called Tropenias converter, a system of melting used by Colne & Co. and which I understand requires iron with silicon from 2.25 per cent. upward.

As to one house controlling this low phosphorus iron, I have positive knowledge of 10 concerns having made it for many years past, and the company I represent has made a specialty of this metal since 1885; but although we own and operate eight blast furnaces, not more than one of them has been continuously in operation on this particular metal, because of the failure of the trade to require a sufficient amount to warrant our increasing the output.

If the present duty of \$4 is to be reduced more than a maximum of 25 per cent. the industry will be killed, and not only does this statement apply to the so-called silicon iron, but, in spite of what others have said on the subject, it will put out of business practically every Eastern furnace, for English iron could very profitably be brought in here practically all the time were it not for the duty, although, as I have already stated, a moderate reduction can be made without damaging effect on the American producer.

In a letter to Mr. Butler, under date of November 28, I stated that in order to carry out the party's pledges a revision of the Dingley tariff was surely necessary, and that I saw no reason for cutting out the products of iron and steel and iron ores, if each commodity throughout the entire line was to be fairly dealt with regardless of selfish or personal interests, nor could I, on the other hand, see why iron ore should be placed on the free list, as suggested by some of my colleagues.

As to pig iron, I felt in the beginning that a 25 per cent. reduction could be made without any harm to the producer, either East or West, but after going considerably deeper into the question I now think 25 per cent. would perhaps be more than the industry as a whole could stand at this time, and therefore recommend not over 10 per cent., or, say, 40 cents a ton, thereby fixing the new schedule at \$3.60.

For iron ore, 2 tons of which are required for a ton of pig, I suggest 10 cents per ton, or 30 cents, instead of 40 cents as provided in the Dingley tariff.

It is, of course, easy to see why some of my nearby competitors, whose investments in iron ore properties are altogether in Cuba, while urging the retention of the duty on finished products of iron and steel, favor free ore, but having during the last three or four years spent half a million dollars in the development of iron ore properties in the State of New Jersey, thereby aiding American labor to a greater extent than would have been the case had we resorted to Cuba for our needs, I hardly think it would be fair to make ore free at one stroke, preferring a gradual reduction in all these products over a series of years, otherwise labor will be severely dealt with before our business can be made to compete with the foreign situation.

The next quotations I refer to are those of Frank Samuel and Major Ennis of Philadelphia, neither of them producers, but both importers, and apparently looking entirely at the mercantile end, for their branch of the industry would certainly be benefited by anything that you can do to enable them to import foreign material at a price that will undersell the American manufacture at home.

These remarks are certainly not intended to reflect any selfish interest or throw discredit anywhere, but they are made by one who has spent the last 15 years of his life in attempting to build up a business in such a way as to warrant a fair return to the investor, but which, since the formation of the company (the Empire Company) some 10 years ago, has not enabled me to pay more than an average of, say, 6 per cent. to those who put in their money at the start, and in making this statement I feel that only the closest attention to the business has enabled us to make any returns, and that a reduction of over \$1 on pig iron at this time would force us to close down every plant we control before the end of the year.

In conclusion, you will please understand that our business is purely that of the mining of iron ore and manufacture of pig iron, our maximum capacity of pig being approximately 26,000 tons monthly, all of which is sold in the open market before going through any further stages of refinement.

Statement of the Oregon Iron & Steel Company, Portland, Oregon.

We beg respectfully to call to your attention some particulars regarding the tariff on pig iron.

We are manufacturers of cast iron pipe in our foundry at Oswego, close to Portland, Ore., and by reason of the high

tariff of \$4 per ton on pig iron from abroad we have to close down our foundry from time to time. For example, we have not operated our pipe foundry since November, 1907, and are not operating it now.

We believe that were the tariff on pig iron cut in two a very large development would take place on this Pacific Coast. It seems more logical for the best interests of this country that the tariff on what may be called the raw material should be cut down rather than cut the tariff on the manufactured material, such as steel beams, &c. Were the tariff on the raw material cut in two, this coast would be enabled to purchase pig iron from Europe and China, from which latter source we are now beginning to receive some, so that large manufacturing establishments could be operated and employment given to American workmen in them. But if a cut is made on steel beams and other manufactured goods and no cut made on the tariff on pig iron, it simply means, as far as this coast is concerned, that the manufacturer of iron and steel commodities will be placed at a greater disadvantage than ever when competing with foreign manufactured goods; and not only with foreign manufactured articles, but with domestic Eastern manufactured articles also. We trust that you may see your way to help us in this respect.

An Anti-Accident Convention to Meet in New York.

The American Anti-Accident Association, whose headquarters are located at Sharpsville, Pa., is arranging to hold a public meeting in New York some time in January. Thomas D. West of Sharpsville, the founder and president of the association, announces that it will be held for the purpose of securing a wider practical consideration of the following questions: 1. What universal actions are best to aid the prevention of accidents, with their accompanying losses of life and property? 2. What methods will be most humane and reliable to compensate the injured and afflicted through accidents and also prove the most just for all concerned? Mr. West continues:

"In view of the fact that at least 14 of the 31 State Legislatures which will be in session this coming winter are to consider the question of employers' liability, something that employees as well as employers are now condemning, it is felt that there should be no delay in giving the broadest publicity to all facts, experiences and views that are feasible on this question. In regard to the first question, the factor whether care and faithfulness in work or recreation is not more important than safety devices in best helping to prevent the most accidents is also a feature that demands the freest expression of views, experiences and facts.

"It is timely that this whole subject should be directed to correct channels, in order that we may best prevent accidents, and a meeting as above suggested should do great good for the cause. A cordial invitation is hereby tendered to Government and municipal officials, professional men and women, proprietors, office and shop managers, union labor leaders, merchants, artisans, laborers, insurance officials, factory inspectors and any other citizens of our country, who may feel an interest in this work, to attend this meeting. The time and place are to be arranged later on."

Any desiring further information are requested to write to Mr. West.

Statistics of strikes in Germany show that there were 773 in the first six months of 1908, against 1054 for the corresponding period of 1907. The number of men affected was 40,504 this year and 80,340 last year. In the first half of 1907 there were 144 lockouts, affecting 37,798 hands. The figures for the first half of 1908 are 119 lockouts and 26,083 employees. The decrease in labor troubles is attributable in part to the depression, also to the consolidation of German employing interests, as well as to efforts to improve the relations of employers and employees.

The output of pig iron in Belgium in the first eleven months of this year was 1,095,240 tons, as against 1,303,970 tons to November 30, 1907. On December 1, 31 furnaces were in blast; on December 1, 1907, the number was 37.

STEEL COSTS IN TYPICAL PLANTS.

The Bureau of Corporations' Investigation Made Public.

WASHINGTON, D. C., December 29, 1908.—The Ways and Means Committee has made public two letters with accompanying tables forwarded to Chairman Payne by Herbert Knox Smith, chief of the Bureau of Corporations, giving the results of an exhaustive investigation undertaken by the bureau to determine the cost of producing steel rails, billets, &c., in typical plants. This work was incident to the general investigation of the iron and steel industry now being made by the bureau, the results of which will be transmitted to the President and, in his discretion, forwarded to Congress and made public. Inasmuch as the books of the United States Steel Corporation supplied the greater part of the data upon which Commissioner Smith's calculations are based, Chairman Payne, during Judge Gary's testimony on the 18th inst., requested his permission to make the figures public, and, having obtained it, has since incorporated them in the official record. The communications and accompanying tables are as follows:

DEPARTMENT OF COMMERCE AND LABOR, BUREAU OF CORPORATIONS, WASHINGTON, D. C., December 14, 1908.

MY DEAR CONGRESSMAN: In reply to the letter of November 25 of the clerk to your committee and in accordance with our conversation of the 11th inst., I enclose herewith a statement as to the costs, prices, and profits of standard rails for the years 1902 to 1906, inclusive, which I showed you on that day. I have made one or two slight modifications, but nothing of importance, in that statement.

I desire to call your attention to one or two points of explanation which are perhaps referred to somewhat too briefly in the statement itself.

1. The figures in table I. are taken from the profit and loss accounts of the various companies examined by the bureau. You will note that they give an average cost per ton for the five years, of all the companies examined, of \$22.39.

The figures in table II. under the heading of "Cost Items" are obtained in a different way, to-wit, directly from the cost sheets of the companies themselves, and give an average cost of \$22.23, a difference of 16 cents in costs on every ton, as obtained by these two methods. This difference, which is very slight, is due to the different sources used in compiling the figures, i. e., accounting as against cost-keeping work in a given company. The same company gets at the same result in two ways, and uses often different tonnages in doing so, thus getting a slight variation; and their approximation by the small sum of 16 cents is about as excellent a confirmation as could be desired of the accuracy of the results.

2. You will note that under "cost items," table II., we start with Bessemer pig iron, \$14.52. In table IV. we go a step farther back and bring it up to the Bessemer pig iron, starting with the ore. We show here the cost of Bessemer pig iron to be \$14.01, a difference of 51 cents between the cost as shown here and the cost of Bessemer pig iron as set forth in table II. The difference between these two figures is due to the fact that the Bessemer pig iron figure in table IV. includes all the iron of this sort for all districts, while the figure used in table II., \$14.52, is simply the Bessemer pig used for steel rails. In regard to this particular division of Bessemer pig, there were some variations due to excess tonnage and the higher freight costs on this class of iron, and to the fact that some of the iron was purchased.

3. There is, of course, a certain amount of labor included in the items on table IV. for raw material, such as limestone and coke, as there necessarily must be in the cost of any raw material. So far as the steel companies are concerned, the only labor that they have put into these raw materials is substantially that of unloading.

4. I have set forth in table III. certain extremes of cost and profit which I think may be of interest to your committee. You will note that I have stated that the highest cost for any company in any year was \$31.27 for one company in 1903. It should be noted, however, that this is not a normal case, as the company was a new one. I have, therefore, inserted what was the next highest cost, to-wit, \$30.29, for another company for the same year. This company presented a normal condition. I felt also that possibly the figures for 1906 would be of especial interest, so I have inserted the lowest profit of any company during that year, to-wit, 99 cents. The average profit for all companies during that year was \$4.85. All of these figures, of course, are per ton.

These results appear simple, and are stated in comparatively small space, but they cover companies which have

produced more than 93 per cent. of all rails produced in the United States during that period. This means an enormous volume of tonnage and an enormous mass of transactions. To get these figures required the work of a considerable force of men in this office for over a year in an examination of thousands of accounts under the direction of an expert steel man. I think it is safe to say that no such complete or accurate figures have been compiled in this country, and that while they necessarily involve some variations, these are small in amount, and nothing approaching this statement in reliability can be obtained from any other source.

I will endeavor to furnish you as quickly as possible such other information as I have available.

HERBERT KNOX SMITH, Commissioner.

To HON. SERENO E. PAYNE, Chairman Committee on Ways and Means.

Table I.—Standard Rails.

	Cost of Rails Sold and Used.		
	Tons.	Cost per ton.	Amount.
1902	2,594,338	\$22.32	\$57,910,323.72
1903	2,641,857	23.78	62,820,909.68
1904	1,934,682	21.57	41,735,625.60
1905	2,974,926	21.30	63,361,003.09
1906	3,491,649	22.77	79,512,433.50
Five years	13,637,452	\$22.39	\$305,340,298.59

Sold.

	Tons.	Price,	Profit per ton.
1902	2,594,961	\$27.65	\$5.34
1903	2,615,754	28.07	4.32
1904	1,898,057	25.70	4.17
1905	2,883,671	27.13	5.88
1906	3,396,381	27.61	4.85
Five years	13,388,824	\$27.34	\$4.97

Table II.—Cost Items of Rails Produced for Five Years, 1902-06.

Tons produced..... 14,020,303

	Cost Items.	
Bessemer pig iron.....	*\$14.52
Waste	1.95
Cost pig iron in rails.....	\$16.47
Labor	1.98
Manganese, &c.90
Fuel35
Steam	+.62
Molds15
Rolls17
Materials in repairs and maintenance.....42
Supplies and tools.....27
Miscellaneous and general works expense.....51
General expense.....14
Depreciation16
Total cost.....	\$22.23
Cost of conversion from pig iron, \$7.71.....	

* The difference of 51 cents between the average cost of Bessemer pig iron and of pig iron used for rails is due to variation in the cost of the excess tonnage and to freight on some of the iron.

† The item of labor does not include, for much of the tonnage, the labor in producing steam, which some companies include in the item "Steam."

‡ The difference of 16 cents between the cost of rails sold from sales statements and rails produced from cost sheets is due to difference in tonnage and in inventories.

Table III.—Comparison of Costs of Several Companies.

	Any company for any year.	average for five years.
Lowest cost.....	\$19.33 (1905)	\$20.74
Highest cost.....	31.27 (1903)	26.61
Next highest cost.....	30.29 (1903)	....
Lowest profit for any company in 1906.....	\$0.99	....
Average profit for all companies in 1906.....	4.85	....

This statement includes the production of seven companies, and covers more than 93 per cent. of all rails produced in the United States during the period.

Table IV.—Cost of Bessemer Pig Iron, All Districts, 1902-1906.
[Tons produced, 51,902,699.]

Cost Items.	Price,	Cost per ton pig iron.
Net total metallic mixture.....	\$3.97	\$7.30
Coke	3.37	3.89
Limestone43
Labor77
Steam12
Materials in repairs and maintenance.....16
Supplies and tools.....13
Miscellaneous and general works expense.....28
General expense.....36
Relining and renewals.....18
Depreciation39
Totals.....	\$14.01

The item of labor does not include, for much of the tonnage, the labor in unloading raw materials, and in producing steam, which some companies include in the cost of raw materials and in the item "steam."

The tonnage covers 93 per cent. of the Bessemer pig iron made in the United States during the period.

DEPARTMENT OF COMMERCE AND LABOR, WASHINGTON, D. C.,
December 17, 1908.

MY DEAR CONGRESSMAN: In accordance with your request, I am sending sheets, showing costs and profits on steel billets, both of the Bessemer and open hearth basic.

As was pointed out in my letter of December 14, transmitting profits and costs on steel rails, there are two sets of figures here, secured from two totally different sources, and therefore valuable as checks on each other, and as showing their general accuracy. The figures in the first table herewith submitted are taken from the profit and loss accounts of the companies examined. The figures in the second table are taken from the cost sheets of those companies. The figures in the first are combined for Bessemer and open hearth steel, giving a total average cost for five years, for all companies represented, of \$20.60 per ton.

The figures for the second set are divided according to Bessemer and open hearth steel, but if the two are averaged up on a weighted average that average of cost will differ only about 13 cents per ton from the average cost given in the first set. This discrepancy is extremely small when the vastness of the transactions is considered, and the enormous number of figures which had to be consulted. It would have been remarkable if there had not been a discrepancy, and the fact that it exists shows the genuineness of the figures, and the fact that it is so small shows that they must be substantially accurate.

While these results are comprised in comparatively few figures, they are the results of a great amount of work—practically 10 or 12 men for nearly a year—and cover all the large companies, practically all the Bessemer ingots produced in the country and more than 75 per cent. of the open hearth ingots for the period used.

HERBERT KNOX SMITH, Commissioner.

To HON. SERENO E. PAYNE, Chairman Committee on Ways and Means.

Cost of Bessemer and Open Hearth Steel Billets, Sold and Used at a Profit.

Produced for Sale or for Use at a Profit.		
Tons.	Cost per ton.	Amount.
1902.....	2,565,084	\$21.73
1903.....	2,119,275	23.01
1904.....	2,697,870	19.34
1905.....	4,365,583	19.19
1906.....	4,881,728	20.93
Totals.....	16,629,540	\$20.60
Sold.....		\$342,612,072.19

Tons.	Price per ton.	Profit per ton.
1902.....	978,386	\$26.33
1903.....	628,070	28.55
1904.....	870,829	20.59
1905.....	1,414,638	21.95
1906.....	1,381,306	25.68
Totals.....	5,273,319	\$24.30

Final Commercial Cost.

Tons produced.....	Large Bessemer billets.	Large basic open hearth billets.
17,908,033		13,422,740
Pig iron and scrap.....	\$14.34	\$13.78
Waste	1.95	1.64

Cost of pig iron and scrap in billets.....	\$16.29	\$15.42
Variation in cost ingots.....	.36	.06
Labor	1.18	1.58
Manganese and fluxes.....	.37	.59
Fuel .....	.37	.94
Steam .....	.49	.37
Molds .....	.16	.17
Rolls .....	.03	.04
Materials in repair and maintenance.....	.27	.47
Supplies and tools.....	.17	.36
Miscellaneous and general works expense.....	.29	.39
General expense.....	.10	.13
Open hearth rebuilding.....	.10	.24
Depreciation .....	.11	
Total cost.....	\$20.18	\$20.87

The difference of \$0.33 between the average cost of Bessemer pig iron, \$14.01, and that used for Bessemer billet ingots is due to variation in cost of excess tonnage, and to freight on some of the pig iron. This figure, \$14.01, here referred to, was shown on the cost sheets of rails already transmitted to the committee by my letter of December 14, 1908.

The difference of \$0.36 on account of the variation in cost of Bessemer and of \$0.06 in cost of open hearth ingots is due chiefly to the fact that only a portion of the ingots made was used for large billets, and the average price at which this portion was used differed by that much from the average cost of all ingots.

The item of labor does not include, for much of the tonnage, the labor in unloading raw materials and in producing steam, which some companies include in the cost of raw materials and in the item "steam."

Only a little more than half of the tonnage of Bessemer and open hearth billets covered by the cost sheets appears in the tonnage of billets sold or used at a profit, the remainder having been used without profit in making other products.

Because of the way in which they are used, no report of

the total tonnage of steel billets produced in the United States is made, but the cost sheets obtained for Bessemer ingots cover practically all, and of open hearth ingots more than 75 per cent., of the production of the country for the period.

Comparative Costs and Profits.

Costs.

Bessemer billets (any company for any year):

Lowest cost (1905).....\$17.43

It must be noted, however, that this cost (\$17.43) was merely the cost for steel sold. But about nine times as much more steel was made and used by this same company at a cost of \$18.26, which is perhaps a fairer and certainly a more significant figure.

Highest cost under normal conditions (1903).....24.95

It should be noted that there were some costs still higher for certain companies, but these were companies apparently just beginning operations and are not fairly representative.

Open hearth basic billets:

Lowest cost (1905).....18.24

Highest cost (1903).....29.04

Profits.

Bessemer:

Lowest profit (1906).....0.62

Average profit (1906).....3.71

Open hearth basic:

Lowest profit (1906).....4.90

Average profit (1906).....5.42

As pointed out above, it has been generally attempted to give figures that are fairly representative, and not those of companies whose conditions, for one reason or another, are abnormal, either as dealing in some special product or having just started, &c. It has been assumed that what the committee desired were figures which would represent different businesses of importance carried on under general conditions.

W. L. C.

A New Scrap Yard at Harrisburg.

The United American Iron & Steel Company, whose headquarters are at Albany, N. Y., has established an important branch at Harrisburg, Pa., for shearing and putting in shape the various grades of scrap for rolling mill and steel works purposes. The company is erecting five buildings along the tracks of the Pennsylvania Railroad and will lay 3000 ft. of sidings in its yards. The sizes of the buildings are as follows: 24 x 120 ft., 40 x 100 ft., 16 x 40 ft., 16 x 24 ft., and 24 x 40 ft. The equipment will include locomotive cranes capable of lifting 20 tons; two large 60-ft. derricks, each capable of lifting 15 tons; one large crane magnet used in unloading; five shears, the largest being able to shear a 100-lb. steel rail. The machines will be run by electricity, each having its individual motor. The shear building will be equipped with an arrangement of trolleys to take the material from the shears to the cars.

It is claimed that the yards at Harrisburg will be the most complete in the world as regards the unloading and handling of scrap material. W. E. Friedman, the secretary of the company, will have direct charge of the Harrisburg branch, and will conduct the sales. His offices will be located in the Union Trust Building. The company maintains yards at Burlington and Rutland, Vt., and Syracuse, N. Y., in addition to those at Albany and Harrisburg.

Bids were opened December 15 at the Navy Department for the construction of a steel steam collier as follows: Newport News Shipbuilding and Dry Dock Company, Newport News, Va., bid 1, \$790,000; bid 2, \$825,000; time, 16 months. Fore River Shipbuilding Company, Quincy, Mass., bid 1, \$933,000; bid 2, \$954,000; time, 15 months. New York Shipbuilding Company, Camden, N. J., \$1,074,000; if Lidgerwood coal apparatus is installed \$30,000 additional; time, 15 months. Maryland Steel Company, Sparrow's Point, Md., class 1, \$933,800; class 2, \$1,011,400; class 3, \$1,027,350; time, 16 months. Wm. Cramp & Sons Ship & Engine Company, Philadelphia, Pa., bid 1, \$805,000; bid 2, \$775,000; time, 20 months.

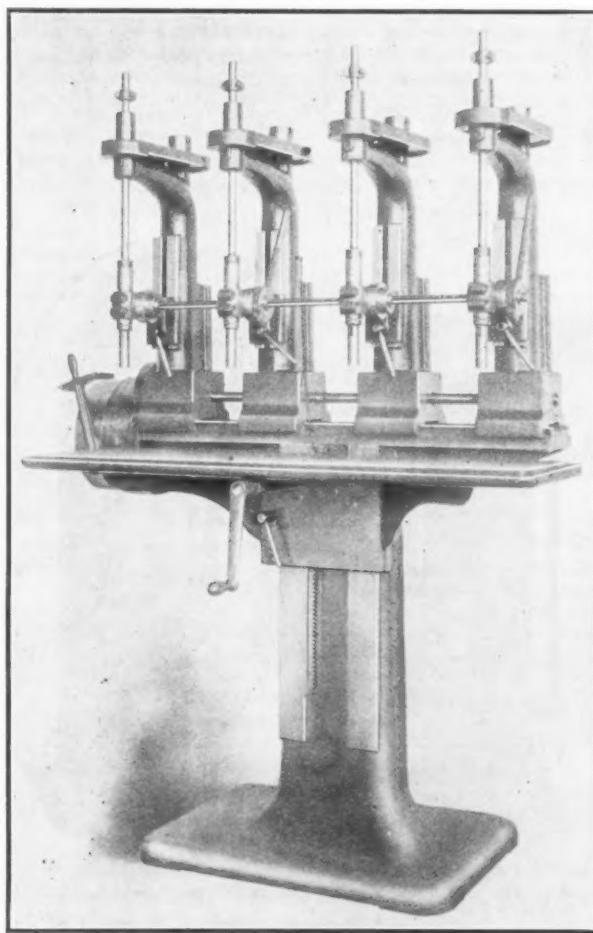
It is stated that over 900 miles of railroad was equipped with automatic block signals in 1908, and that probably 2000 miles will be so equipped in 1909. The Union and the Southern Pacific did considerably more than half the new work this year.

A Modified Taylor & Fenn Multiple Drill.

In a new adaptation of the manufacturers' drill press, built by the Taylor & Fenn Company, Hartford, Conn., the particular feature is that all of the spindles are simultaneously fed to the work. This is accomplished by connecting the feed pinions by a splined shaft. Any number of feed levers may be applied; the machine shown in the illustration has two of these levers. This arrangement in no way interferes with the adjustable features of the regular machines.

The illustration shows the top columns spaced evenly, but they are adjustable laterally on the bed and may be placed close together or at various distances apart. This type of machine is particularly adapted for drilling a large number of duplicate parts having the same distance between the holes to be drilled.

By releasing the keys in the hubs of the feed pinions the connecting shaft may be removed at any time, so that



A Manufacturers' Multiple Spindle Drill Press with Connected Feeds, Built by the Taylor & Fenn Company, Hartford, Conn.

The spindles may be used independently, as in the company's other multiple drilling machines. This type of machine is built with any number of spindles up to six.

Congressional Legislation.—In an article soon to be published in *American Industries*, James W. Van Cleave, president of the National Association of Manufacturers, warns the National Council for Industrial Defense, which the association organized, that a determined effort will be made at the present and next session of Congress to pass antiinjunction labor legislation. He says that there are now before the Judiciary Committee of the House of Representatives 10 bills which would restrict the use of the injunction. Several similar measures are also before Senate committees. He states that all of these measures require watching, and urges every business man to do his part. He further declares against attempts to amend the Sherman Antitrust law, which he says would mean its virtual repeal. He opposes the amendment of that law, not only because the boycott might then be legalized, but also because, he says, "I am as much opposed to the

greedy and tyrannical employers outside as well as inside the trusts as I am to the boycotters."

Expected Tax Legislation in Pennsylvania.

HARRISBURG, PA., December 29, 1908.—The session of the Pennsylvania Legislature, which will begin January 4, will probably have revenue raising legislation as one of its chief features, because of the demands of the State for road construction, school and other objects which were established on a more expensive basis in the session of 1907, and the chances are that among the bills to be presented will be three of considerable importance to the manufacturing and mining interests of the Commonwealth.

It is understood in official circles that a bill to tax the capital stock of all manufacturing companies is contemplated. At present all capital actually engaged in manufacturing is exempt, so that the iron and steel companies as well as others conducting huge enterprises in Pennsylvania do not feel the burden of State taxation except upon loans and such capital as is held for other purposes. The plan of the new bill is to impose a tax of 3 mills.

Taxes are also proposed upon the coal and oil produced in the State, this plan having been advocated four years ago, but defeated. Bills for these objects have been prepared and are now being considered by prominent legislators.

Some enlargement of the powers of the State Railroad Commission may also be asked, as the commission has been in operation a year and finds the need of wider authority.

Coincident with this legislation there will be inaugurated a policy of closer collection of corporation taxes. It is said that many companies have failed to make settlement, considerable leniency having been shown, but the fiscal officers propose to enforce payment and if necessary to impose 12 per cent. penalty and interest.

A. B. H.

A Proposed Patent Law Agreement with Germany.

The Washington correspondent of the *New York Times* states that a patent law agreement between this country and Germany will be sent to the Senate for ratification in the very near future. The exact wording of the agreement is not yet made public, but it is likely that no reference will be made to England's recent change in her patent laws, though that change was the original cause which led up to the present proposed entente between this country and Germany.

England's patent policy has long been a thorn in the commercial and industrial sides of several of her neighbors. In August a new British law went into effect making things still worse by shortening the period of protection, and when the congress at Stockholm brought German representatives in contact with Commissioner of Patents Edward B. Moore the pending agreement was at once canvassed eagerly as the most promising scheme by which Germany and the United States could either retaliate on England, or, better still, force her to join a new patent convention.

A New Blount Motor Driven Speed Lathe.

The J. G. Blount Company, Everett, Mass., has brought out a new motor driven speed lathe designed particularly for manual training schools, but suitable for manufacturing purposes. The feature of the machine is an overhanging headstock containing a three-step cone pulley belted to a corresponding cone mounted on an extension of the motor spindle, the constant speed motor being placed underneath the bed, below the pan, where it is protected by the leg. The motor spindle is provided with an outer bearing to prevent side strain. The speed variations are the same as with the usual drive from a countershaft. The head spindle runs in ring oiling bearings. The tailstock is furnished with a clamping lever, permitting of quick adjustment for varying lengths of work.

Judge Gary Revises His Testimony.

WASHINGTON, D. C., December 29, 1908.—The Ways and Means Committee has received from Judge Elbert H. Gary, chairman of the United States Steel Corporation, a revision of the testimony given by him on the 18th inst. The corrections are nearly all minor verbal changes, but in a few instances he has amended his estimates of cost and has added figures showing freight rates between various points which he was unable to supply at the time of his hearing. The general effect of the changes and conditions is to emphasize the necessity, from the standpoint of the witness, of retaining at least a large part of the protection afforded by the existing tariff. The figures submitted by Judge Gary are designed to show that English and German steel manufacturers can land their products in New York at 90 cents per ton less than Pittsburgh manufacturers, while the all-water freight rates from German and British ports to San Francisco give the foreign manufacturer a net advantage of nearly \$8 per ton in view of his somewhat lower cost of production. Judge Gary quotes the freight rate on pig iron from New York to Pittsburgh at \$2.45 and the rate from Germany and British ports at \$2.85. Pig iron, which he stated in his testimony could be produced at profit at Pittsburgh for \$12.65, he now says can be manufactured for \$12.29, and on this basis he figures his total cost in New York at \$14.74. Foreign pig iron at the furnace he quotes at \$11 per ton, and with the freight to New York added he figures at \$13.85, a differential of 89 cents per ton in favor of the foreign producer.

The Work of the Ways and Means Committee.

The Ways and Means Committee, having completed the hearings on the new tariff bill, has taken up for consideration the oral testimony, briefs and other statements submitted since the committee held its first meeting, November 10, and the work of preparing the new measure may be said to be fairly under way, although little progress will be made in the actual adjustment of rates until after the holiday recess.

The first work of the committee since the close of the hearings has been the careful examination of the revised text of the Dingley act, which has been prepared for the committee by Thomas J. Doherty, special counsel of the Treasury Department before the Board of General Appraisers. The text of schedule C, metals and manufactures thereof, as thus revised, has already appeared in *The Iron Age*. The complete revised text is now being printed in bill form, with wide margins for annotation.

A subject that has already received attention at the hands of the committee is the form to be given the bill to carry out the maximum and minimum principle upon which the new measure is to be based. While, of course, all decisions reached at this early stage are more or less tentative, it has been practically decided to prepare the bill in such form as to permit rates to be entered in parallel columns, each item to carry two rates, the lower of which will be that of the general tariff to be extended to the products of all countries granting to the United States the most favored nation treatment, while the higher will be a retaliatory rate to be assessed upon the products of countries which discriminate against goods imported from the United States. No uniform margin between these two sets of rates will prevail, and in some cases the maximum and minimum rates will be identical, but, as heretofore intimated in this correspondence, the object of the committee will be to provide an average difference of approximately 20 per cent. For obvious reasons the committee does not desire to authorize maximum rates which are clearly prohibitory, as the imposition of such rates would give foreign countries upon whose products they were imposed a sound basis for protest through diplomatic channels.

The committee has decided to take up the schedules of the bill in the order in which they appear in the present law; hence schedules A, chemicals, oils, paints, drugs, &c., and B, earthen ware, glass, &c., will probably be disposed of before the details of schedule C, metals and manufactures thereof, are considered. Nevertheless, owing to the overshadowing importance of the metal sched-

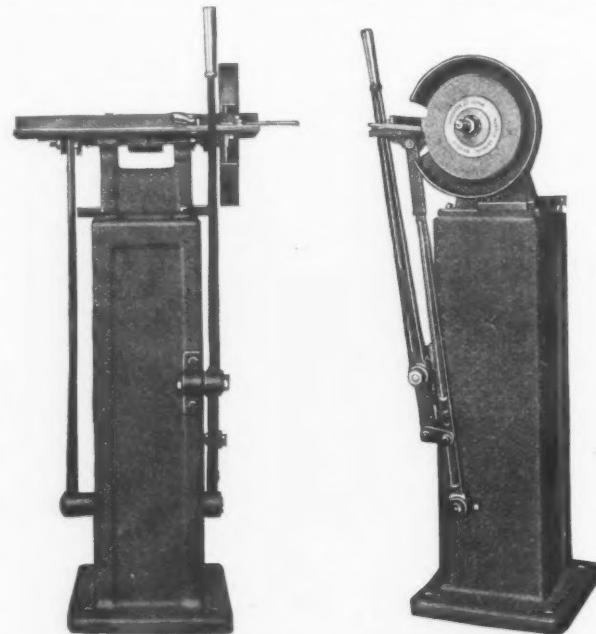
ule, it is the subject of more or less discussion at the daily meetings of the committee. The conflicting testimony of Messrs. Schwab, Gary and Carnegie with reference to the necessity for continuing existing rates of duty, or at least a large measure of protection, is causing the members of the committee much perplexity, and it is possible that before schedule C is reached it may be decided to call other witnesses specially equipped to testify as to costs of production. If further hearings on the metal schedule are held the witnesses will be heard in public as heretofore, and their testimony will be fully reported in this correspondence.

W. L. C.

The Colton High Speed Steel Cutter.

The Colton Combination Tool Company, Easthampton, Mass., has brought out a machine for cutting high speed steel, performing the same function for this class of steel as the hack saw does for the common tool steels. The cutting agent is a thin abrasive wheel, containing carborundum, running at 2500 rev. per min. The bar is clamped to a swinging frame, operated by a lever, which brings the work to the thin cutting wheel. An adjustable gauge permits of cutting off to sizes.

The special purpose of the machine is the cutting of steel into sections which are to be fashioned into tools for use in holders, but it is also useful for cutting other materials where a clean, square edge is desired. It cuts



Front and Side Views of a Machine for Cutting High Speed Steel Bars, Made by the Colton Combination Tool Company, Easthampton, Mass.

5-16-in. square tool steel in 5 sec., $\frac{1}{2}$ -in. in 10 sec. and proportionately with increasing sizes up to 1-in. round or square stock, according to the test of the builder. A larger size cuts high speed steel up to $2\frac{1}{2}$ in. The arbor is of crucible steel and the bearings are made dust proof. The weight of the No. 1 machine shown is 200 lb. and the floor space 12 x 12 in.

The American Society of Mechanical Engineers will hold its next monthly meeting January 12 at 8.15 p.m., in the Engineering Societies Building, 29 West Thirty-ninth street, New York. Carl G. Barth, consulting engineer, Philadelphia, Pa., will present the paper of the evening on "The Transmission of Power by Leather Belting." The paper will give the author's conclusions based on 18 years' experience in the use of belting and the designing of machine tool drives where uniform cutting speeds must be maintained for protracted periods. Stereopticon views will illustrate the paper, among which will be charts for the solution of belting problems. Altogether, it will probably be one of the most comprehensive presentations of the subject of belting ever given before the society.

Trade Publications.

Industrial Narrow Gauge Equipment.—Atlas Car & Mfg. Company, Cleveland, Ohio. Pamphlets Nos. 1070 and 1075. Deal with the company's industrial railroad equipment, including mine, dump, quarry, scoop, ore, rocker dump, radial truck, mill, foundry, dryer, cane and plantation, and electric motor cars, &c. Wheels, axles, trucks, turntables, switches, crossings, portable track, trolleys, car hitchings, &c., for industrial railroads are included.

Steel Pulleys.—Oneida Steel Pulley Company, Oneida, N. Y. Three folders. Refer to the Oneida steel pulleys, that are built in all sizes from 6 to 104 in. in diameter, the width of face ranging from 3 to 40 in., and the bore from 1 to 8 in. Illustrations are given of Oneida steel pulleys having diameters of 80 and 90 in, respectively.

Grates.—George H. Thatcher Company, Albany, N. Y. New York agents, Universal Grate Bar Company, 95 Liberty street, New York. Catalogue. Pertains to the Coe sectional shaking and dumping grates, which are claimed to be easy to operate and to insure perfect combustion with any grade of fuel. Illustrations show the construction of the grates, including the solid and stationary types.

Air Compressors.—National Brake & Electric Company, Milwaukee, Wis. Publication No. 386. Size, 6 x 9 in.; pages, 24. Devoted to air compressors for industrial service, and illustrates and describes type H motor driven compressors, types L and 3VS compressors, belted compressors, portable air compressor outfits, combined air compressor and water pump units, air compressor governors, types A and R governors, and type N oil-pneumatic governor. Tables of dimensions, capacities and other data relating to the compressors are appended.

Concrete and Concrete Machinery.—Enamel Concrete Company, Des Moines, Iowa. Catalogue. Size, 5½ x 9 in.; pages, 30. Descriptive of Enamel concrete, which is claimed to possess all the virtues of ordinary concrete and also other desirable features. The machine for making the concrete is illustrated and described, and the Enamel process is explained step by step.

Speed Reducing Transmission.—D. O. James Mfg. Company, 351 W. Monroe street, Chicago, Ill. Folder. Shows the O'Kelly speed reducing transmissions for reducing the speed from a motor or driving shaft to any required speed of the machine or driven shaft. The device is made in a variety of sizes and speed reductions from ¼ to 50 hp., either vertical or horizontal. An illustrated description of these devices appeared in *The Iron Age* July 30, 1908.

Chain Blocks, Electric Hoists, Trolleys and Cranes.—Yale & Towne Mfg. Company, 9 Murray street, New York. Catalogue, 6 x 9 in., 70 pages. A brief story of the development of hoisting devices from the time of the invention of the differential pulley block to the present form an introduction, and assembled views of chain blocks and unassembled parts are given, together with illustrations of the various types of trolleys and cranes made by the company. A section of the book is devoted to the company's standard lines of electric hoists, which are illustrated with sectional views. Price-lists of standard sizes are included.

Roller Bearings.—Hyatt Roller Bearing Company, Newark, N. J. Folder. Treats briefly of the advantages of anti-friction bearings and shows the Hyatt standard bearing, the roller of which is made from a strip of steel wound into a coil or spring of uniform diameter. It is claimed that owing to its flexibility it presents a bearing surface along its entire length.

Friction Clutches.—The Hill Clutch Company, Cleveland, Ohio. Supplemental catalogue of 24 pages. Devoted exclusively to the company's friction clutch devices. The various types of clutches made by the company are shown, with assembled and sectional views. Unassembled parts are also illustrated and price-lists given.

Well Drilling and Prospecting Machinery.—America Well Works, Aurora, Ill. Bulletin No. 105, 7¾ x 10½ in., 191 pages. Shows a number of views of well drilling, prospecting and coring machinery, together with parts of such equipment. An interesting history of the development of the well drilling industry is set forth and the advantages of drilling deep wells for pure water, with information as to the method of drilling economically. Some views of the Beaumont, Texas, oil fields are given and a description of the operations of the first gusher well sunk in the district is included. Several types of pumping equipment are shown and described, and other supplies, such as smelting tools, belts, pulleys, &c. Useful hydraulic information is also given.

Metal Planers.—Rockford Machine Tool Company, Rockford, Ill. Two circulars. One describes the 24 x 24 in. Rockford metal planer, which is furnished with one of two heads on the cross rail and with any length of bed required in even lengths. The other circular describes the 28 x 28 in. planer, which is similar except for size.

Roller Bearings, Ball Bearings, &c.—Standard Roller Bearing Company, Fiftieth street and Lancaster avenue, Phila-

delphia, Pa. Catalogue No. 24, 5 x 8 in., 187 pages. This supersedes all of the company's previous publications and shows its full line of roller bearings and ball bearings designed for all purposes. The company also manufactures special steel castings containing alloys of chrome, nickel, vanadium, &c., examples of which are illustrated, together with a line of standard drop-forgings. Space is given to the various types of thrust bearings and a number of shop interiors where these bearings are in use are shown. An interesting illustration is that of the largest thrust bearing ever made, which complete weighs 7500 lb. and carries a load of 1,500,000 lb., running at 100 rev. per min. A number of views of the company's plant are scattered through the book, and sectional views of the more important bearings are given.

Iron and Steel, Heavy Hardware, Steam Filters, Supplies, &c.—W. G. Hagar Iron Company, formerly Western Iron & Supply Company, 2208 North Second street, St. Louis, Mo. Catalogue, 6 x 8½ in., 532 pages, bound in cloth. A particularly complete jobbers' catalogue of bar iron and steel; sheet, tank and flange steel; painted and galvanized roofing; tool and machinery steel; cold rolled shafting; boiler tubes; staybolt iron; bolts, nuts, rivets and washers; and supplies for steam fitters, machinists and engineers, boilermakers and blacksmiths, mines, mills and railroads. Standard fittings and supplies are illustrated and prices are listed. The book also contains considerable useful information, such as the number of tubes usually put in water tube boilers of various sizes, standard steam boiler measurements, weights of iron and steel, weights of black sheets and galvanized sheets, weights of steel angles, steel channels, steel dies, &c.; table showing approximate number of rivets in 100 lb., table of transmission of power by wire rope, belting, steel shafting, &c. Directions for setting and operating boilers and steam pumps and much other valuable information.

Valves.—American Steam Gauge & Valve Mfg. Company, Boston, Mass. Catalogue, 6 x 9½ in., 89 pages. The company's line of valves, which include about all the known standard types, are shown, together with some special valves and valve fittings. Useful information, such as rules and information of the United States Board of Supervisors and Inspectors of Steam Vessels and directions for adjusting valves are included.

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The Petroleum Iron Works Company's Enlargement.—The Petroleum Iron Works Company, Sharon, Pa., builder of blast furnaces, steel plate work, &c., has completed the concrete foundations for an extension, 145 x 160 ft., to its main shop and will shortly commence work on the steel structure. The building will be equipped with a dipping plant, the tank of which will be set 35 ft. under the floor level and will contain asphalt in which riveted steel pipe will be immersed. This new addition is expected to be completed by March. The main shop will then be 145 x 480 ft., the extension increasing the floor space about 50 per cent. The company is operating full force on contracts for steel riveted storage tanks for the oil fields in Illinois, Texas, Indian Territory, Mexico, Oregon and California. It is also building a self-supporting steel stack, 4 ft. 6 in. diameter by 100 ft. high, for the Youngstown Sheet & Tube Company, Youngstown, Ohio; two Leman oil condensers of 600 bbl. capacity each for the Cudahy Refining Company, Coffeyville, Kan., and four Leman oil condensers of 1000 bbl. capacity for the National Refining Company, Findlay, Ohio.

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The next regular meeting of the American Institute of Electrical Engineers will be held in the auditorium of the Engineers' Building, 33 West Thirty-ninth street, New York City, on the evening of January 8, at 8 o'clock. Prof. Elihu Thomson of the General Electric Company, West Lynn, Mass., will present a paper, entitled "Conditions Affecting Stability in Electric Lighting Circuits."

It is stated that the Russian Government did not offer any encouragement to the recently formed South Russian Iron Syndicate and no assurances were given as to the policy the government would pursue in relation to it. The management of the new trust has been committed to M. G. A. Bunge, general director, and two associates.

John L. Wilkie of Gould & Wilkie, New York, has been appointed receiver for the American-Diesel Engine Company, New York, manufacturer of oil and gas engines. The company, which has a capital stock of \$250,000, is said to have assets exceeding \$100,000. The receiver has been authorized to continue the business 10 days.

THE IRON AGE

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GEO. W. COPE,	
A. I. FINDLEY,	{ EDITORS.
RICHARD R. WILLIAMS,	HARDWARE EDITOR

Railroad Buying in 1908 and the Outlook.

If all the outlets for iron and steel works products had shriveled in proportion to the shrinkage in railroad demand, 1908 must have been a far leaner year for the iron trade. The actual consumption of structural steel this year has probably been within 15 or 20 per cent. of that for 1907—and so far as steel buildings and bridges alone are concerned the gap was even less. In the wire trade, too, the comparison with 1907 has been more favorable than in the average of rolling mill products. But beginning with rails and running down the line of railroad consumption, the showing is that of a veritable famine. In the absence of statistics, and, judging only from the information available through the year as to the rate of rail mill operation and of rail laying for renewals and new track, the rail production for 1908 may be estimated as considerably below 50 per cent. of that for 1907.

The data gathered by the *Railroad Age Gazette* and printed in another column of this paper tell the story for the car and locomotive works. While the railroads had begun to curtail smartly in 1907, the locomotives ordered in that year were 3482, against 1182 this year, or three times as many, and the freight cars ordered were 151,711, against 62,669, or two and a half times as many. Measuring the two years by the actual record of locomotives and cars built, the poverty of 1908 is glaring—2342 locomotives and 76,555 cars this year, against 7362 locomotives and 284,188 cars in 1907, which was by far the best year on record.

Naturally the disposition is to turn from so unfavorable a showing to the prospects for the new year. The car works, we are told, have less than two months' work ahead even for the reduced forces all are employing. Further orders are expected early in the new year, but there are no indications yet that 1909 will be a year of plentiful railroad orders. It promises to stand nearer to 1908 than to 1907 in volume of business in rails, locomotives and cars. The view of an Eastern railroad officer, expressed in an article published some months ago, is that the extraordinary earnings of the railroads in the five years ending with 1907 were due largely to traffic created by their own enormous expenditures for track, bridges and equipment. His conclusion was that it will be several years before such a run of railroad buying will be repeated. While this is not an inevitable conclusion, even if the premise as to the chief source of railroad earnings in recent prosperous years be granted, the fact that the bonded indebtedness of the railroads has increased so rapidly in years of prosperity has an im-

portant bearing upon the scale of their expenditure in the next few years. An increase in bonded debt from \$6,722,000,000 for the railroads of the United States in 1903 to \$9,043,000,000 in 1907 is a matter of no small significance.

As to the prospect for 1909 the opinions of railroad presidents and managers have been asked and are printed in connection with the track and equipment statistics cited above. There is agreement in the general statement that improvement will come slowly. It is also the testimony of those who answered the inquiries that while the outlook now is much better than that of a year ago, and the chance of harm from hostile legislation is greatly reduced, the assurance that the railroads will not suffer further at the hands of politicians is not all that could be desired. Mention is made of the pendency of tariff changes as likely to delay activity in new directions or in industrial extensions. In a word, the railroad attitude is one of hopefulness, but still a measurable distance short of assurance.

Reorganizing the Navy Yards.

If Secretary of the Navy Newberry succeeds in carrying out his announced policy of reorganizing the navy yards, and brings the great plants to the point of high efficiency which they would achieve if they were conducted as intelligently directed private enterprises, he will have accomplished a great work. Costs should be cut in an important way; the same annual expenditure should produce much better results. Items for the repairs of warships should be smaller, and expenses should be proportionately less where the navy undertakes new construction. But to bring about this improved order of things the reorganization must be thorough; the present system of management must be altered essentially, not only in the elimination of the bureau system, but also in the department offices themselves. The purchasing system of the navy as it applies to navy yard equipment must be placed on a new basis, following some one of the systems that have been worked out in the best managed of the great industrial establishments. Otherwise the promised improvement will be by no means complete.

It has long been realized by practical manufacturers that the shops conducted under the direction of the Navy Department, perhaps with some exceptions, which do not, however, include the navy yards, are extravagantly managed. The dividing up of a plant into departments known as bureaus, each operated independently of the others, even to the unnecessary duplication of minor sub-departments and their equipment and to some extent of the shops themselves, has been the chief cause of this. But another and important reason is the method of buying, which has been freely criticised as wasteful.

Contracts are awarded on bids submitted on specifications prepared at the yards as they require equipment or supplies. The office corresponding to the purchasing department is located at Washington. It has, of necessity, only a superficial knowledge of the greater portion of the articles it is called upon to buy. Specifications are often considered subordinate to price. If a department of one of the yards requires a machine and specifies certain features deemed essential to the work to be done, bidders are given the option of submitting bids with a tool presumed to be the equivalent in design and construction. If the machine purchased at a lower price was really the equal to that specified no harm could result from this system, and frequently such is the case. But there are instances where work in hand can best be done on a certain ma-

chine having special characteristic features, and a substitution is disadvantageous. Even more often a machine inferior to the specification is named in the contract. Every practical manufacturer realizes that in deciding upon new equipment the work to be done with it should be the first consideration, and that price is a factor only in its relation to the cost of producing and the quality of the product. The navy yards are compelled more often than is generally known to accept machines which are wholly unsuitable or uneconomical for the purposes for which they were bought, and shop efficiency is proportionately reduced. The War Department has a better system; the specifications of the various arsenals are usually followed closely in the buying, the effect being that in a great percentage of cases the men responsible for results practically do their own buying. In the navy yards there are glaring instances of machines which have hardly been used because they could not accomplish the tasks required of them. They were purchased regardless of specifications and have practically proved to be losses, to say nothing of the wasted space which they occupy. Other machines have been built over at considerable cost in order to render them useful, which is an expensive way of doing business.

It may not be considered practical under government management of the naval shops to centralize the purchasing department of each yard at the yard itself, but it is difficult to see the logical objection. Under the plan of reorganization, according to the announcement of Secretary Newberry's plans, the Bureau of Steam Engineering, Bureau of Construction and Repair and other bureaus will be wiped out and the various departments of each yard placed under a single head. There will be consolidation of shops with active co-operation throughout the establishment. Presuming that the head is an efficient officer, he would be better situated to know the wants of the works in the way of equipment and supplies than the purchasing office of the Navy Department. If he is a man sufficiently able to manage the yard his judgment should not be overruled at Washington. If he is inefficient, he should be relieved. The time will probably come when expert civilian heads will be chosen for Government works, or naval officers will specialize along the lines of industrial management instead of taking navy yard work as an occasional period of shore duty. There can be no doubt of the fact that whoever heads so great a plant, doing so important a task as construction and repair of warships and their intricate equipment and mechanisms, should be trained for the work. But under any circumstances the man chosen should be given the power to select the tools upon which the success of his charge must depend for success. Either a recommendation as contained in specifications should be followed more closely or the purchasing power placed directly in the control of the manager, just as it is in large private manufacturing establishments.

The Revival of the Profit Sharing Proposal.

A distinction is to be made between the relations existing between employers and labor unions and the relations existing between employers and their employees. While the former, judging from many developments of the past few years, do not show improvement, there are many signs of an advance toward a better footing of proprietors and wage earners. Nothing is plainer in the campaign so vigorously carried on for the open shop in the machine shops and foundries of the country than the evidence that employers who do not make a union card a condition of employment are striving to

give their men better conditions than the union can offer. The employer who refuses recognition to the union with the intention of running a low wage shop and getting off more cheaply in the matter of shop conveniences finds himself quite out of step with the general movement.

It is interesting in this connection to note the revived advocacy of profit sharing in the closing weeks of 1908. From Andrew Carnegie's latest book extracts have been widely published in the past week, containing the prophecy that the day will come when payment to the worker will be made wholly or in part by profit sharing, with a guaranty of a minimum wage. At the last annual meeting of the National Civic Federation in New York, M. E. Ingalls, chairman of the Big Four Railroad, predicted that profit sharing would supplant the trade agreement as the basis of co-operation between employers and employed. In some form or other, he argued, profit sharing with labor is bound to come, and to the railroad companies of the country he considered that it offered the best form of insurance that can be devised against a régime of Government ownership. Sir Christopher Furness, a third capitalist who has very recently given prominence to the plan, avowed frankly that he had recourse to it as a preventive of such strikes as had made the operation of his shipyards at Hartlepool, England, an unending succession of strikes alternating with brief and well nigh profitless seasons of activity of a business sort. That may be the first thought that will ordinarily be entertained in considering the subject, for partnership is doubtless the nearest approach to the perfect relation between employer and employed. But there are other benefits than the elimination of friction over questions of labor. The vast advance toward economical production made possible by community of interest, and, perhaps, of equal weight with this, the powerful forces set in motion through the accumulated savings of profit sharing workers, are factors whose effect is great and far reaching. In some such way, it seems likely, is a solution to be reached of the problem of high cost of production, which is a matter of grave and growing concern to the managers of American industries.

The decrease in number of employers through the multiplication of great corporations furnishes an added incentive to the practical development of schemes for employee participation in earnings. The stockholding privilege given to employees of the United States Steel Corporation's subsidiaries has unquestionably been a strong factor in the corporation's advance to its place of eminence. If this accumulated interest and esprit de corps could be capitalized it would rank well among the increase in iron ore values and the other increments that are commonly credited with the squeezing out of the original infusion of water in the corporation's stock. Moreover, the plan as it has been carried out in the past six years has been at least a partial answer to the complaint that men who might have become moderate sized employers under the conditions of 15 or 20 years ago have no longer a chance to become more than workers for salaries.

It is of no small significance that profit sharing, which has now for a good many years been passed by as a proposal perhaps ultimately applicable, should lately have been thrust forward for serious consideration as a practical remedy for the bad adjustment between capital and labor.

Deprivation of the right to boycott may be an interference with the liberty of one set of persons, but it safeguards the liberty of others.

Canadian Opinion on Steel Protection.

TORONTO, December 28, 1908.—Parliament opens January 20. It is not expected that the Government will have any fiscal or commercial changes to propose, and there seems little likelihood that the Opposition will raise important questions under either of these heads, except in the way of the usual criticism of the Government's financial management. It will cause no surprise, however, if private members cause some discussion of features of the tariff. There is very strong feeling on the subject of the policy adhered to for fostering the iron and steel industries. With a fresh lease of power from the people, the Government may not be disposed to treat present objections to its policy very seriously. At the same time it cannot afford to be disrespectful to a sentiment that is steadily growing among the farmers. Two recent occurrences have contributed very greatly to the strength of this sentiment. The first of these is the launching of the Dominion Iron & Steel Company into a rail export business, and the other is the publication of Andrew Carnegie's views as to the needlessness of protection for the prosperity of the steel industry of the United States. Few matters have been more canvassed by the Canadian press of late than these two, and this discussion has given a strong, new impulse to the agitation from consumers for an abatement of the burden which the steel duties and bounties impose. In the Canadian West the feeling against these imposts is particularly strong, as they keep out the cheaply produced American steel of which Mr. Carnegie speaks.

The Western provinces are all earnestly endeavoring to develop internal railroad systems that will be the diffusers of settlement and gatherers of produce over their vast areas. The transcontinental railroads traverse the provinces and throw out branch lines, but to do the gridironing necessary for the development of such great expanses of fertile territory purely local lines are needed. To promote the construction of these the three prairie provinces have but slender means, for the basic security of the public credit—that is, the land itself—is not the property of these provinces. The owner of the public lands in Manitoba, Saskatchewan and Alberta is the Dominion Government. Hence these provinces cannot give land and subsidies to encourage railroad building, and their bond guarantee does not carry as much weight as it would if they owned the crown domain. It is not an easy matter, therefore, for Alberta and Saskatchewan to induce capital to go into the building of the much needed domestic railroads. Everything that tends to add to the difficulties of this provincial railroad problem causes irritation, and in no other part of the country is the duty on rails so unpopular as in the West. From that quarter, therefore, any movement in Parliament for the carrying out of the Dominion Grange's demands for the lessening of protection on iron and steel will receive hearty support.

Trade Notes.

Of the project to establish steel works at Cobourg, on Lake Ontario, something was said in a previous issue of *The Iron Age*. An agreement was reached between the promoters and the representatives of the municipality, providing for a site and for limitation of taxation. A company has now been incorporated under the laws of Ontario for the purpose of constructing and operating the works which the private negotiators agreed to establish in Cobourg. The name of the new corporation is the Provincial Steel Company, Ltd., and the capital is \$250,000. The provisional directors are Robert Heath of Staffordshire, England; Frank W. Coolbaugh, Philadelphia; Rev. William Beattie and Niel F. MacNachtan, Cobourg. Mr. Heath is said to be of the firm of Robert Heath & Sons, proprietors of large collieries and iron works in North Staffordshire.

Among other companies of which notice of incorporation appears in the current number of the Ontario *Gazette* are the following: The National Metalware Company, Hamilton, capital \$40,000; Torwell Foundry, Ltd., Berlin, capital \$50,000; Nipissing Diamond Drilling Company, Cobalt, capital \$50,000.

The Ontario Iron & Steel Company of Welland has received orders for some of the steel work on the 25 locomotives that the Canadian Locomotive Company of Kingston is building for the Grand Trunk Pacific Railway Company.

C. A. C. J.

Henry Grey and the New Structural Mill.

The Carl Lueg Medal has just been awarded by the Verein deutscher Eisenhuettenleute to Max Meier, now the general manager of the Bismarck Huette in Silesia, but formerly of the Differdingen Works in Lorraine. The award was made on the ground of Meier's courage in introducing the large unit gas engine and the Grey universal mill. During the recent tariff hearing Andrew Carnegie gave much credit to Charles M. Schwab for having brought from Germany a mill for rolling new shapes of structural steel. It is somewhat exasperating that there is being ignored in all this commendation the original inventor, Henry Grey, an American, who not alone designed and built the first mill at Differdingen, but also the second mill at Bethlehem.

In presenting the Carl Lueg Medal to Mr. Meier, the president of the society, C. Springorum, general manager of the great Hoesch Works, said: "You have won high merit, furthermore, by having carried through practically, under great difficulties, a method of rolling based upon new principles, which, it was true, had been invented by an American, but which had not been practically introduced in the home country of the inventor." The Germans, therefore, gave Henry Grey credit for his achievements, which are fully appreciated also by those familiar with rolling mill work in this country. To the larger lay audience, however, Mr. Carnegie's words may convey the impression that Mr. Schwab brought over a German invention, when, as a matter of fact, it was a German, Max Meier, who first had the courage to introduce Henry Grey's mill, and it was only years after it had been in regular operation at Differdingen that Mr. Schwab installed it at Bethlehem.

British Steel Works Earnings in Depression.

Reports given at the annual meeting of Dorman, Long & Co., Ltd., Middlesbrough, England, December 8, show that the profits in the last fiscal year were £171,841, while the amount carried forward from the previous year was £57,542. After paying dividends of 6½ per cent., against 7½ per cent. in the preceding year, £64,709 was carried forward. The company set aside £20,000 for the redemption of the second debenture stock, and wrote off £30,000 for depreciation. The expenditure on new plant amounted to £83,554, an electrically driven finishing mill being among the additions, while an electrically driven blooming mill is expected to be completed in February. The company received from its investments in Bell Brothers, Ltd., and the Northeastern Steel Company, Ltd., which it has under lease, £20,250 and £9940, respectively, as against £27,000 and £19,988 in the preceding year. The report says there is reason to believe that the end of the depression in the iron trade is approaching, and that within the next few months the relations between costs and market prices will be more satisfactory. Through Bell Brothers, Ltd., the company has been involved in litigation with the Carnegie Steel Company, which alleges that the process used at the open hearth plant of the Clarence Works of Bell Brothers, Ltd., infringes the patents on the Monell open hearth process.

Samuel Gompers, president of the American Federation of Labor, announces that on advice of counsel, in view of the application of the Sherman antitrust law to labor unions in the decision of the United States Supreme Court in the Loewe hat boycott case, the publication of the "We do not patronize" list in the *Federationist* is discontinued, and that Congress will be asked to except labor unions from the antitrust provisions of the Sherman act.

OBITUARY.

H. W. CALDWELL.

Henry Wallace Caldwell, president of the H. W. Caldwell & Son Company, Chicago, Ill., died December 22, at Redlands, Cal., aged 65 years. He had been an invalid for a number of years and had taken up his residence in California in the hope of improving his health.

Mr. Caldwell was born in Bath County, Ky., and left college to enlist in the Union Army in the Civil War. Although at the time very young, he attained the rank of lieutenant. At the close of the war he moved to Indianapolis, Ind., and engaged in business there. He was for a number of years general superintendent of the Indiana State Board of Agriculture, and in this capacity had charge of the erection of the exposition buildings at the State Fair Grounds, these being among the first buildings of that class that were erected in the United States. He afterward engaged in the grain elevator business and became interested in the mechanical devices used in such plants.

His particular attention was directed to the transportation of grain by means of conveyors, and he turned his efforts especially to the improvement of the screw or spiral conveyor, which was then a very crude device and ordinarily manufactured by hand by millwrights equipping the elevator. Mr. Caldwell patented and commenced the manufacture of the Caldwell conveyor, and for 33 years his name has been associated with the manufacture of this special type of conveying apparatus. While continuing the manufacture and sale of the screw conveyor, he also engaged in the building of grain elevators, moving from Indianapolis to St. Louis in 1876.

After several years the grain elevator contracting department was discontinued, and he then gave his



H. W. CALDWELL.

entire attention to the manufacture of screw conveyor and other machinery for the conveying and elevating of materials and the transmission of power. In 1881 he moved to Chicago, and the history of the business has been one of steady growth ever since. In 1892 the business was incorporated and his sons, Frank C. and Oliver N., became associated with him. His wife died eight years ago. In addition to the two sons mentioned he leaves two daughters, residing in California.

Mr. Caldwell's long continued connection with the manufacture of machinery and the large proportions to which his business had grown made him one of the prominent figures in the machinery world. He was a member of the Presbyterian Church and of the Loyal Legion.

JAMES CORRIGAN.

James Corrigan, head of the firm of Corrigan, McKinney & Co., Cleveland, Ohio, iron mine, vessel and blast

furnace owner and operator, died December 24, after an illness of several months, at the age of 59 years. Mr. Corrigan was stricken with peritonitis last September, and was in a critical condition for several days. He grew better, however, and appeared on the way to recovery, but later there were complications, which led to an operation the day before his death. He was born in Iroquois, Ont., in 1849. While a boy he was employed on a boat on Lake Ontario. Later he went to Cleveland, and was employed in an oil refinery. Soon he embarked in business for himself as a refiner of oil, and after several years of very successful operations sold out to the Standard Oil Company in 1881. Soon after this he turned his



JAMES CORRIGAN.

attention to the Great Lakes, and became a large vessel owner and operator. In the past few years his vessel holdings had been decreased considerably, and he had devoted his attention to his valuable iron ore properties and furnace interests. The firm of Corrigan, McKinney & Co. was formed in 1888, Price McKinney becoming associated with Mr. Corrigan in the business, and an important interest was acquired by the late Stevenson Burke. The company is one of the largest independent shippers of lake ores, and operates the Genesee Furnace in New York and the Josephine and Scottsdale in Pennsylvania, the latter of which is now being rebuilt. The company started some time ago to build a duplicate of the Josephine Furnace, and recently acquired a large site in Cleveland, on which it was planned to commence soon the erection of a large blast furnace. Until 18 months ago it operated the River Furnace in Cleveland, which reverted to its owner, the Upson Nut Company, at the expiration of a 10-year lease. Mr. Corrigan leaves only a brother, John Corrigan, and one son, James W. Corrigan. His wife and three children were drowned eight years ago when Mr. Corrigan's yacht Idler was capsized in a storm in Lake Erie.

CHARLES A. BRAYTON, president of the Standard Car Wheel Company, Cleveland, died December 24, aged 65 years, from the effects of a stroke of paralysis, which he suffered a year ago. He leaves two sons, W. A. and Charles A., Jr., who were associated with their father in business.

CHARLES W. WHITNEY, who built the Keokuk, an iron-clad vessel, which led the Federal naval attack on Fort Sumter in April, 1863, died December 25, at Kinderhook, N. Y., aged 77 years. He was born in New York, and two years before the Civil War he became New York manager for Horace Abbott & Son, iron manufacturers, of Baltimore. He was a friend of Ericsson, who designed the Monitor, and he himself designed and built the Keo-

kuk, which was launched at East River and Eleventh street in December, 1862, and in April of the next year it figured in the attack on Fort Sumter. The Keokuk was struck during that engagement and sank the next day in Charleston harbor. The Keokuk because of its speed, 10 miles an hour, and its armor, which was 5½ in. thick, was one of the wonders of naval architecture of the time.

ENOCH JAMES, a well-known British engineer and steel works manager, died November 13 in his sixty-first year. He was best known as manager of the Dowlais Works of Guest, Keen & Nettlefolds, Ltd., at Cardiff, Wales, in the nineties. Since 1902 he had been engaged in general consulting engineering. He was one of the four commissioners of the British Iron Trade Association who visited the United States in the fall of 1901 to investigate the conditions of iron and steel production, and he wrote the portion of the commission's report dealing with general steel works practice.

A. HICKS, superintendent of the Hudson Iron Company's mines at Fort Montgomery, N. Y., was struck by a West Shore Railroad train December 26 and shortly afterward died at the Newburgh Hospital. He was 63 years old.

PERSONAL.

Fritz Asthoewer, Sr., engineer, of Essen, has been elected an honorary member of the Verein deutscher Eisenhuttenleute, as pioneer in the steel casting industry in Germany, the first successful castings having been made by Jakob Mayer of Bochum.

Paul B. Morgan of the Morgan Construction Company, Worcester, Mass., has returned from a short European trip.

Charles H. Daker has resigned as vice-president and secretary of the Iron City Steel Company, Bessemer Building, Pittsburgh, to go in business for himself at 717 Park Building, where he will represent the Cambridge, Ohio, plant of the Interstate Iron & Steel Company, which rolls high carbon steel bars, and also John Church, Glen Iron, Pa., manufacturer of Glen cold blast charcoal pig iron.

C. S. Lovell, secretary of the E. H. Mumford Company, Philadelphia, since its organization, has resigned to accept a position with Baxter D. Whitney & Son, Winchendon, Mass., and is succeeded in office by E. M. Huggins, chief draftsman of the Mumford Company, also since its organization.

Just after recovery from an illness Dr. Richard Molendine, secretary of the American Foundrymen's Association, was severely injured in a runaway accident two weeks ago. He is still incapacitated for work, but is much improved.

W. S. McCoombs, superintendent of Mary Furnace of the Ohio Iron & Steel Company, Lowellville, Ohio, has resigned and will retire from active business. He will be succeeded by Mark C. Steese, formerly superintendent of blast furnaces of the La Belle Iron Works, Steubenville, Ohio.

J. I. Andrews, who on January 1 assumes the position of general manager of sales of the American Sheet & Tin Plate Company, Pittsburgh, has returned from a two months' sojourn in the South, greatly improved in health.

A Distribution to Employees.—The American Blower Company, Detroit, Mich., repeated this year at Christmas time the distribution of money, first made two years ago, to its employees. On the former occasion each employee received \$1 and an additional dollar for each year of continuous employment. The largest single sum thus paid was \$25, the entire life of the company at that time being 25 years. At the close of 1907, owing to the business depression, there was no distribution. In connection with the presentation of the various amounts this year the president of the company, James Inglis, addressed the employees, extending holiday greetings and expressing the satisfaction of the management at the continued cordial relations which had gone on practically without a break for more than a quarter of a century.

The Vice-Presidents of the Steel Corporation.

The vacancy created by the resignation of James Gayley as first vice-president of the United States Steel Corporation has been filled by the appointment of William B. Dickson, until now second vice-president. David G. Kerr, long connected with the Carnegie Steel Company, and one of the partners at the time of consolidation, has been appointed second vice-president. Mr. Kerr has been associated with the work of Mr. Gayley in the management of the ore properties and transportation of the Steel Corporation, his special function having been to direct the distribution of the ore, limestone and coke from their source to the blast furnace.

Pacific Coast Metal Trades.

The Washington District members of the United Metal Trades Association, the membership of which is made up of machinery manufacturers on the Pacific Coast, held a successful meeting at the Hotel Washington, Seattle, on the evening of December 21. Addresses were made by J. M. Frink, Washington Iron Works, Seattle; T. B. Summer, Summer Iron Works, Everett; Gilbert Hunt, Gilbert Hunt Company, Walla Walla; George James, Variety Iron Works, Seattle; Niven McConnell, McConnell Engineering & Machinery Company, Tacoma; John Hartman, Atlas Foundry & Machinery Works, Tacoma; J. V. Patterson, manager, the Moran Company, Seattle; J. T. Heffernan, Heffernan Engine Works, Seattle; H. S. Hastings, commissioner of the United Metal Trades' Association.

In the main, subjects of particular interest to manufacturers on the Pacific Coast were discussed. The promotion of the open shop movement and through it the bettering of shop conditions were emphasized, and it was shown that the possibilities in this direction now open to the employer are greater than they have ever been. Emphasis was put by several speakers on the advisability of specializing. It was pointed out that instead of entering upon some line already represented in that section the manufacturers would do well to study how to produce on the coast articles now almost exclusively drawn from the East. It was suggested that officers of the United Metal Trades Association obtain information as to various manufactured articles now shipped in which could be manufactured there. The question of raw material supply was considered in this connection. The encouragement of trade schools was another matter touched upon, and some attention was paid to the question of freight rates from the East to the coast and the desirability of securing reductions. Much interest was shown in the statement of members connected with shipbuilding, as to the impossibility of the development of this industry under existing laws.

A committee was appointed to arrange for another meeting of the Washington District at which employers and their foremen will consider the formation of a foremen's association. Committees were chosen on legislation and on trade schools, and delegates were elected to represent the Washington District at the Transcontinental Freight Bureau Committee meeting, to be held in Chicago in January.

In the issue of *The Iron Age* of December 24 an item was printed to the effect that the Torrent Pump Company is a new concern in Sebring, Ohio. This is incorrect. That company has been out of business for nearly a year. The Service Pump Company, however, has been recently started at Sebring, Ohio, to manufacture iron pumps.

Tate, Jones & Co., Inc., Empire Building, Pittsburgh, have received a contract from the Republic Iron & Steel Company, Youngstown, Ohio, for the equipping of a large spike furnace, with producers and other appliances, for using fuel oil.

The Working Requirement of the British Patent Law.

Notes on the First Decision Thereunder.

BY JOHN D. MORGAN.*

In the present month the British Comptroller-General has handed down his first decision in a case arising under section 27 of the present British patent act. This is the section which provides, in substance, that any one may ask for the revocation of a patent which is being worked mainly or exclusively outside of the United Kingdom.

The case just adjudicated, which may be regarded as a test case, possessed many desirable features for that purpose. In the first place, the patent was granted in 1900, seven years before the law went into effect. Second, a factory had been built in Belgium for making roof tile according to the patented process, and the trade in Great Britain had been supplied from the Belgian factory. These are the conditions under which many valuable outside patents have been exploited, and a question confronting many importing patentees has been, What allowance will the English authorities make for a home factory built with sufficient capacity to supply the English trade? The third fact of interest is that the patents were advertised for sale or as open for license agreements.

There is little else that could be done by foreign patentees in any effort to save patents, after the expiration of four years, where it is impracticable or undesirable to manufacture in England in good faith and on a commercial scale. It can fairly be said that the whole question of the application of this section was up for decision.

The Facts on Which the Case Was Based.

The facts are succinctly stated by the Comptroller as follows:

It appears that the invention is in commercial operation in Germany, France and Belgium under licenses from the grantee, Mr. Hatschek, in those countries, and it is admitted that the process is carried on exclusively outside the United Kingdom. The first and main question which arises under the section, therefore, is whether the patentees . . . can give satisfactory reasons why it is not carried on in this country. The Société Anonyme Eternit [of Belgium] became the licensee of both [British] patents under a license dated January 26, 1906, granted by Mr. Hatschek . . . In reply to the question whether the factory was erected in Belgium with a view of supplying the English market, he said that at the outset there was no question of that, but that while the works were under construction the British license was negotiated for and was then taken into account in the construction. He was unable, however, to say how much more capital was expended on the factory in consequence of the intention to supply the English market than would have been expended if it had not been proposed to supply that market. The witness also admitted that it would be difficult to ascertain to what extent the expenditure on the factory was increased by this consideration, nor could he state whether it would have been necessary to enlarge the works for the purpose of the English sale.

He further affirms in his declaration that in consequence of the erection of this factory the company has always been and is now in a position to meet fully and satisfactorily all demands in the United Kingdom for articles made according to the patented process; that the factory has been sufficient to enable the company to deal with the whole of its trade both in the United Kingdom and in other countries; and that if the patents were revoked and factories were established in England for carrying on the process, it would not be possible to produce the articles made according to the process as cheaply in such factories in Great Britain as is done now in Germany, France and Belgium, owing to the cost both of labor and materials; and that the goods made in such factories in England could not be supplied to the trade and public at such low figures as are now offered by the company, or as could be offered by the French and German manufacturing companies if they were free to import such goods into the United Kingdom. . . . The proportion of slabs manufactured at his factory in Belgium which come to the English market may be taken to be about one-sixth of the total amount of the sale everywhere, and about one-half of what is not imported into England is consumed in Belgium. He further alleged that it is necessary to manu-

facture a certain quantity of the goods to a certain scale in order that the cost of manufacture should not be too high, but that he could only give an approximate estimate of the quantity and scale necessary. In his opinion it would be necessary to manufacture 500,000 square meters annually in order to work on acceptable conditions.

The only other witness on behalf of the patentees stated in his declaration that on or about July 13 last his firm received instruction from patent agents in Belgium in behalf of the company to insert advertisements in various British journals, intimating that the owners of the patents were desirous of disposing of them, or of entering into a working arrangement with firms in Great Britain likely to be interested in the process covered by the patents. His firm was also instructed to communicate with various British firms for the purpose of granting licenses under the patents, or of selling them, the object of these advertisements and offers being to secure, if possible, some proper and sufficient arrangement for the manufacture of the process covered by the patents within the United Kingdom, having regard to the terms of section 27. Copies of the advertisements and replies to the offers are annexed as exhibits to his declaration.

In his examination he said that he knew of no better firms than those to which he wrote, and that he knew of no journals which would circulate among those likely to be interested better than those he had advertised in. In reply to a question by the counsel for the applicant as to whether the firms and people whom he addressed personally were not brick makers, he stated that one, Doulton & Co., were not brick makers, but tile makers and makers of terra cotta and imitation tiles of which Doultons were one of the leading makers in the country. In reply to the question whether he thought the offers were *bona fide* offers and that the company wished to sell the patents, he answered that it certainly wished to sell them so far as his firm was concerned, and that his firm had no instructions that this was to be an attempt to evade the act. They were instructed to obtain a license if they could.

In this connection it is to be observed that Mr. Hatschek could not have granted a license without contravening the terms of his present license to the company, inasmuch as he is precluded by it from granting any one else a license in regard to this manufacture for Great Britain and Ireland, and that the effect of a sale to any British manufacturer by him and the company of its patent rights outright would have been to close the British market to the Belgian company, a more serious result than the revocation of its patents seems likely to entail. Mr. Marks' firm was acting on behalf of the company, and apparently without any instructions from Mr. Hatschek. No offer was received in response to these advertisements and communications.

The Point of the Case.

It will be seen, therefore, that the case turned on the question as to whether a British patentee manufacturing on a commercial scale outside the realm, who imported his goods into the realm and thus exercised his monopoly of selling and, through purchasers, the monopoly of using, and held in abeyance his monopoly of making, but had advertised his willingness to sell or license, had given "satisfactory reasons why the article or process is not so manufactured or carried on" (*i. e.*, within the United Kingdom) as required by the statute.

Counsel for the patentees asked the Comptroller to hold that satisfactory reasons within the meaning of the law why the process was not carried out in the country had been given. He urged, in brief, that the erection of the Belgian factory had temporarily impoverished the company and it was, therefore, financially impossible for it to erect a factory in England; that the factory had been built in Belgium before the enactment of the working requirement of the English law; that this factory is capable of satisfying the entire commercial demand, including that from the English market. He contended further that the goods could be manufactured more cheaply abroad than in England. He also urged the advertising of the patents as subject to sale or license, "but admits that the mere offer, that the owners were prepared to treat on reasonable terms, as made in the advertisements, would not, of itself, have satisfied the re-

* Of the New York Patent Bar.

quirements of the act." It was urged finally that, as the patents were issued prior to the enactment of the law, the statute was retroactive. Counsel asked on this score for greater leniency on the question of sufficiency of excuse.

Counsel for the petitioner requesting revocation of the patent, as stated by the Comptroller, argued as follows:

The object of the section was to remove the restraint upon manufacturers in this country which is caused by the existence of patents in cases such as this; that the intention of Parliament was by the section to create a position of allowing any one to manufacture, and to see whether the manufacture will spring up in this country or not. If the manufacture is for the benefit of the country, it will spring up; but if it is not for the benefit of the country, it will not spring up. What I am to take into consideration, he says, is this: The patented article is not manufactured in the United Kingdom. Is there reason why we should not fairly expect up to the present moment that it should be; and are there any special circumstances which make it practically impossible to have got the manufacture carried on up to the present moment? The patentees have taken practically no steps to get the article manufactured in this country; nobody would expect such advertisements as they have inserted in the papers to be attended to by substantial people; the letters which have been written have been, with one exception, sent to brick makers, and it could not be expected that brick makers would take up these patents.

He also urged that as long as the patented article is simply manufactured in Belgium and imported here on terms satisfactory to the Belgian manufacturers and patentees, it is impossible to find out what the real demand in this country is, because the demand of course depends very largely on the terms upon which the goods are offered. He also maintained that there was no proof whatever that the goods can be made more cheaply abroad than in this country; but that this was not a question which Parliament had intended that either the Comptroller or the court, or any one else, should decide unless it were in a very extreme case. With respect to the contention that existing patentees should be treated more leniently than persons who take out their patents after the passing of the act, he pointed out that Parliament had thought one year of grace sufficient, and that it was not possible to put any interpretation on the act which would have the effect of lengthening this period.

The Decision.

The decision of the Comptroller is probably best represented by a series of extracts from his decision, as follows:

The main question to be determined is whether the patentees have given satisfactory reasons why the patented process is not carried on in this country. If they have given satisfactory reasons for their inaction, their patents cannot be revoked either under section 27 or under section 24 (3). The provision in each of these sections which makes the giving of satisfactory reasons for inaction by a patentee a conclusive reply to any application for revocation was inserted in the act in order to carry into effect, so far as Great Britain is concerned, article 2 of the Additional act of 1900, to which all the states that have joined the International Union for the Protection of Industrial Property are parties. That article provides that patents may only be revoked within the states in the union for nonworking, . . . "provided the patentee cannot show reasonable cause for his inaction." Whilst the bill for the act was passing through Parliament, many efforts were made on the part of its opponents and critics to define what might and what might not be accepted as reasonable causes for the inaction of a patentee. But Parliament decided to leave it to the tribunal dealing with each case to determine after hearing the facts and arguments whether or not the patentee could give satisfactory reasons for his inaction. It is obvious that in determining this question, regard must be had not only to the interests of the patentee, but also to those of the public; and that the mere fact that it would be more profitable or convenient to a patentee to manufacture abroad than in this country cannot be regarded as a satisfactory reason for not taking the necessary steps for introducing the manufacture into this country. Otherwise no advantage would be gained in any state of the union by legislation under which patents can be revoked for non-working; because a patentee of his own accord and without any legislative pressure will naturally be disposed to manufacture where it is most profitable and convenient for him to do so.

Every existing patent granted in this country has conferred on the patentee the monopoly of making, using, exercising and vending his invention in this country in such manner as may to him seem meet. In the present case, the patentees have taken advantage of their monopoly of sale, but have not availed themselves of the monopoly given to them by their patents to manufacture the patented articles in this country. On the evidence I can find no good ground for coming to the conclusion that there is any inherent rea-

son why the patented process should not be carried on commercially in this country. It is already so carried on in Belgium, Germany and France; and Mr. de Meulemeester in paragraph 4 of his declaration has admitted that the patented articles are produced in Germany at a very cheap rate and on a very extensive scale. From the evidence it appears that there is little, if any, difference in the prices at home and abroad of the materials used or in the facilities for obtaining them, and the only other reason which has been alleged why the process can be more profitably carried on in Belgium, Germany and France, than in the United Kingdom, is that the wages of the workpeople in those countries, who in the carrying out of the patented process now under consideration for the most part are unskilled laborers, are lower than in England. If this reason is an insuperable bar to the introduction of the industry to this country, it is very difficult to understand how many industries which are carried on successfully in the United Kingdom continue to be so carried on.

Dealing next with the question of the advertisements and offers to sell the patent rights, I cannot regard the fact that no answers were received by the patentees to them as a satisfactory reason for not manufacturing in this country. In the first place, they were not inserted or made until very near the expiration of the year of grace which had been allowed the patentees by the act; and, even if they had attracted the attention of persons who might otherwise have been willing to work the process, the fact that only a month of the year of grace remained unexpired would naturally make manufacturers less willing than they otherwise might have been to enter into arrangements with the patentees. For any one acquiring the patent rights would be in no better position to defend the patents against applications for revocation than that which the patentees themselves from whom he bought them possessed. It seems to me impossible to hold that a patentee can relieve himself from the duty of manufacturing in this country by the mere insertion at any time of a few advertisements, and the sending round to manufacturers of a few circulars to which no replies are received. The advertisements and offers in this case were, I may say, of the vaguest description; they gave no intimation of the terms on which the owners of the patents were prepared to treat, beyond the statement that such terms would be reasonable.

With reference to the suggestion that patentees who had taken out their patents before the passing of the act should be treated with greater leniency than those who have since taken out patents, it is to be remembered that the act contained a considerable number of provisions, *e. g.*, those relating to the procedure for obtaining extensions of the terms of patents, the restoration of lapsed patents, the granting of patents of addition, and the mitigation of the severity of the patent laws in the matter of disconformity, which materially improved the position of existing as well as that of future patentees, and that these provisions all came into force at the commencement of the act on January 1 last; while the act also prevented any application being made under section 27 for the revocation of an existing patent until after August 28 last; that is to say, until the expiration of a year from the passing of the act. . . . The interpretation which I am asked to put upon the act would have the effect of lengthening this year of grace. I can find nothing in the act which would justify me in doing this.

It has been further contended . . . that the object of the section being merely to bring about the establishment of new industries in this country, a patent may not be revoked under it unless it can be shown that the revocation will lead to the establishment of such new industries. In the present instance, if the patents are revoked, it seems to me impossible to say that a new industry will not be established in this country where no royalties will be payable in respect of the carrying on of the process; but even if no such industry is started here, their revocation will undoubtedly have one beneficial result, for it will free the trade in the patented article and enable French and German manufacturers to import it freely into this country, the effect of which may very possibly be to reduce its price, and whilst in no way preventing its importation from the Belgian factory, give purchasers an opportunity of selecting for themselves between the articles manufactured there and at other foreign factories. Mr. Shaw argues that this was not the intention of the section, but I can find nothing in the act to warrant me in coming to that conclusion. I have always regarded the object of the section as being to put a check on the practice, which was alleged to prevail very extensively, of taking out and maintaining patents in this country, not with any intention of working them here, but with the object of preventing the patented articles from being manufactured here, and from being imported by any other parties than the patentees. If, on the evidence which has been submitted in this case, the two patents in question may not be revoked, I find it very difficult to imagine any case in which a patent can be revoked under the section.

The decision of the Comptroller evidences a strong desire to carry out the wishes and intent of Parliament.

and that he has been successful in this can scarcely be questioned. It is true that appeal lies from the Comptroller to the court. If, however, the Comptroller is right in this general and significant statement of the basic intent of section 27—viz., "I have always regarded the object of the section as being to put a check on the practice, which was alleged to prevail very extensively, of taking out and maintaining patents in this country, not with any intention of working them here, but with the object of preventing the article from being manufactured here and from being imported by any other parties than the patentees"—it is difficult to see how there can be any serious modification of his decision on appeal. This official declaration is in full accord with the construction heretofore placed upon this section in *The Iron Age*, both in the editorial of October 1 and in my article in the issue of August 20 last.

The Comptroller very explicitly and properly (following the custom of tribunals in cases where the law leaves such great latitudes as in the present case as to what does or does not constitute a state of facts justifying a suspension of statutory operation) limits his decision to a case involving the particular facts before him. There is, therefore, some slight possibility of going too far in an attempt to generalize from a case of this kind, and yet a careful generalization should be made to assist an important class of American manufacturers in the crisis which now confronts them with regard to English business. With this understanding, I believe we are warranted in making the following deductions:

1. Advertising the English patents for license or sale will not be considered either as a "nominal working" or as a sufficient excuse for not working.

2. No leniency will be extended to patentees on the ground that the statute is retroactive so far as they are concerned.

3. That fiscal reasons, such as an extensive foreign plant, advantages of centralized production elsewhere and kindred things, will not be regarded as germane to a showing of sufficient cause for nonmanufacture under this section.

4. That valuable English patent rights granted to foreigners can be protected only by adequate commercial exploitation in England, or by inactivity in other countries until the English rights are disposed of, should this not occur within the period of grace.

5. The careful avoidance in this decision of the enunciation of any general principle as to what might constitute a good excuse for nonmanufacture should warn all interested parties of the peril of relying on conditions and state of facts as matter of excuse.

A Hydro-Electric Development in Colorado.—The Central Colorado Power Company, says a correspondent of the New York *Evening Post*, is expending no less than \$22,000,000 for the development of the water power of the State. It has expended \$6,000,000 and two years' time on the construction of its main transmission lines for hundreds of miles across the Rocky Mountains, from Glenwood Springs to Denver. Within 30 days it will be delivering electric power in the city of Denver to run the tramways, light the streets, and supply private and public buildings. Thenceforth it will be possible to run the city by the water power of the mountains without coal. Nearly every important mining district in the State will adopt the new power for the operation of its mines, meaning greater economy, greater efficiency, and increased output at less cost. In the gold mining districts, hundreds of low grade propositions that cannot now be operated on account of the excessive cost of power will be rendered available to capital.

The Fosdick Machine Tool Company, Cincinnati, Ohio, states that an error was made in *The Iron Age* of December 24 in the announcement that that company is changing officials in the retirement of Philip Fosdick. The change was made in the Kern Machine Tool Company. Philip Fosdick has not been connected with the Fosdick Machine Tool Company for several years.

THE IRON AGE

NEWS OF THE WORKS.

IRON AND STEEL.

Reports that the Hyde Park and Saltsburg sheet mill plants of the American Sheet & Tin Plate Company would start up early in January are untrue. These plants may start later in the year, but from present indications will not be started next month.

The new tube mill of the Parkesburg Iron Company, Parkesburg, Pa., is now in operation and is running on charcoal iron tubes. The mill is electrically driven, and the machinery and motors are giving excellent results. The company has placed contracts for the erection of an addition to its tube mill, 85 x 150 ft., of steel construction. The new building will be placed at the finishing end of the mill and will be covered by a traveling crane.

The plant of the Lebanon Iron & Steel Company, Lebanon, Pa., has been sold under foreclosure proceedings for \$225,000. The purchase, it is understood, was made in the interest of the bondholders, who will reorganize the company.

GENERAL MACHINERY.

The Carlin Machinery & Supply Company, N. S., Pittsburgh, Pa., has received a contract for furnishing a 40-hp. tall rope or double drum haulage engine for handling coal and fire clay near Dennison, Ohio. This equipment is put in to save the cost of doing the work of mules as now, and the investment is the result of the extreme low prices prevailing for fire clay products.

It is reported that the North Coast Railroad, of which Robert E. Strahorn, Spokane, Wash., is president, contemplates the erection of new shops at Spokane.

The Merrill Iron Works, Merrill, Wis., making a specialty of the manufacture of sawmill machinery, reports much activity. It has recently been making machinery for a new sawmill at Pine River.

Coincident with the increase of its capital stock to \$25,000, the name of the Leader Foundry Company, Quincy, Ill., has been changed to the Leader Foundry & Machine Company. The management contemplates the addition of a machine shop to the plant, which, besides doing general machine work, will make a specialty of power presses and die work.

The Link-Belt Company, Nicetown, Philadelphia, Pa., has received an order from the Philadelphia & Reading Railroad for a locomotive, coal, ashes and sand station to be erected at Ninth and Wallace streets, Philadelphia. The plans for this station, which will eventually supersede the one now in use, call for reinforced concrete bins supported by an under structure of steel covered with concrete, and there will be duplicate systems of conveying machinery, each to have a capacity of 100 tons per hour of coal and 250 cu. yd. of ashes in 10 hr. There will be 12 pockets for coal, two to each of the six coaling tracks, with a total capacity of 2000 tons, and the ashes will be kept in two pockets having a capacity of 250 cu. yd. The sand storage will contain six hoppers, three on each side of the station, to hold 48 cu. yd. of sand. It is expected that work will be begun on the station early next year. Other installations in Pennsylvania include elevating and conveying machinery at cement mills, paint works, hat factory and fuel equipment for a mining company. An open-top carrier will be installed for a contractor in New York and an ashes hoist for a manufacturer in North Carolina.

The State Board of Public Works, F. C. Stevens, superintendent, Capitol Building, Albany, N. Y., is having plans prepared for a machine shop to be erected at State and Water streets, Syracuse. The structure will be of brick, two stories, and will be equipped with a modern line of machine tools. The plant is to be used in connection with repairs to tools and machinery for State bridges and canal work.

The American Laundry Machinery Company, Rochester, N. Y., and Chicago, D. M. Cooper, local manager, has purchased property on Kossuth street and the Buffalo, Rochester & Pittsburgh Railroad, Rochester, and contemplates erecting in the spring a large plant, including foundry, machine shop and warehouse of brick and steel or reinforced concrete construction for the manufacture of laundry machinery. The company is already operating two plants in Rochester.

POWER PLANT EQUIPMENT.

The Foos Gas Engine Company, Springfield, Ohio, is furnishing a producer gas plant complete to the Standard Optical Company for its new lens grinding department at Geneva, N. Y. The engine will be a 100-hp. three-cylinder Foos vertical, from which power will be transmitted by rope drive. The producer will use Pennsylvania anthracite, and is so arranged that a portion of the gas will be drawn off and used for annealing furnaces. The plant will be a very complete one and will contribute materially to the economical operation of the factory. The Foos Company's factory at Springfield has been working overtime for several months in the endeavor to keep up with orders.

The Buffalo Steam Pump Company, Buffalo, N. Y., has been awarded contract by the city of Grand Rapids, Mich., for 10

sewage pumps having a total capacity under maximum conditions of 250,000 gal. per min. The pumps are to be placed in four stations, one to contain two 18-in. pumps, the second to contain two 24-in. pumps, the third to contain two 24-in. pumps and the fourth four 40-in. pumps. The 10 pumps together, without motors, will weigh approximately 200,000 lb. The electrical equipment will be furnished by the Westinghouse Electric & Mfg. Company under a separate contract.

The Syracuse Cold Storage Company, Northwest street and Erie Canal, Syracuse, N. Y., is receiving bids until about January 10 for four 150-hp. boilers and four 200-hp. boilers.

Foundries.

The general machinery and foundry plant of the Rogers & D'Artenay Company, Sacramento, Cal., which was recently partially destroyed by fire, has been rebuilt and is about ready to begin operations. It is expected that a foundry will be added to the plant in the near future.

The Hart-Parr Gasoline Engine Company, Charles City, Iowa, intends to erect a large steel foundry to manufacture castings for its engines. The company is having a heavy demand for its oil cooled gasoline engines and is making shipments to all parts of the world. It has just completed a second building, the same size as the original, which it will equip with modern machinery. This new building will double the capacity, and when in operation about 500 men will be employed.

The North plant of the Chickasaw Iron Works, Memphis, has just installed a 5-ton Newton cupola, making the fourth cupola of this design in the works of this firm.

The Paxton Foundry & Machine Company, Paxton, Ill., has added a foundry to its plant for the making of iron, brass and aluminum castings. Plans are being made for further additions during the coming season.

Application for a Pennsylvania charter has been made by George W. Thomas, William B. Rodgers and Joseph G. Thomas of Johnstown for the Penn Foundry Company.

Bridges and Buildings.

The Radley Steel Construction Company has been incorporated at Hornell, N. Y., with a capital stock of \$50,000, to engage in a general mechanical and civil engineering business and to manufacture engines, machinery, tools, &c. J. J. Radley of Hornell, and R. T. Brooks and R. W. Pease of New York are the incorporators and directors.

The Toledo-Massillon Company, Toledo, Ohio, has secured contract, at its bid of \$20,190, for erecting a two-span steel bridge at Fort Hunter across the Schoharie River and connecting the towns of Florida and Glen.

Fires.

Fire, which is said to have originated in the cupola, December 24 destroyed the iron foundry of the American Car & Foundry Company at Berwick, Pa., causing a loss of about \$50,000.

Hardware.

The business of M. R. Warner & Son, Cromwell, Conn., manufacturer of hammers, has been incorporated in Connecticut with an authorized capital stock of \$80,000, of which \$10,000 will be issued immediately. The incorporators are Chauncey M. Warner, Cromwell; Theodore M. Savage, Berlin, Conn., and Willis C. Warner, Cromwell. The officers have not been chosen. The company will continue the manufacture of the Warner & Noble hammers. The Warner hammer business dates from 1818. The factory will be located as before in Cromwell.

The directors of the United States Whip Company, Westfield, Mass., have organized with these officers: President, George E. Whipple; vice-president, Frederick L. Parker; treasurer, F. A. Sanford; assistant clerk, H. M. Gowdy. The new directors are J. H. Millikne, manager of the Sidney plant of the company, and C. F. Donovan of the firm of Donovan Bros., lash manufacturers.

C. C. Carter has purchased the factory of E. Butterick & Co., Troy, N. H., and is equipping it for the manufacture of tubs, pails and packages. The business will be conducted under the name of the Carter Wooden Ware Company. Operations will begin January 1. Fifty hands will be employed.

The Northwestern Woven Wire Works, Milwaukee, Wis., has recently taken out a building permit for a \$16,000 factory at Thirtieth and Clark streets.

The Eller Mfg. Company, Canton, Ohio, has just completed a warehouse in which a large and varied stock will be carried of its various lines, including metal ceilings, eave trough, conductor pipe, cornices, skylights, metal roofing, metal shingles and tin plate. During the past year the company has been somewhat handicapped on account of the lack of warehouse facilities, but the new building will permit carrying sufficient stock at all times to meet customers' requirements.

Miscellaneous.

The Lawson Mfg. Company, Ellicott Square, Buffalo, N. Y., has not yet decided whether it will erect a plant to manufacture its loose pulley oil cup and other articles which it intends to place on the market. C. G. Lawson is president and treasurer, A. F. Lawson vice-president, and E. G. Zacher secretary.

It is planned to erect a new plant at Minneapolis, Minn., to

manufacture the Joy-McVicker gasoline traction engine, the invention of W. E. McVicker, who also invented the McVicker engine which is manufactured by the Alma Mfg. Company, Alma, Mich. Those interested in the new enterprise in addition to Mr. McVicker, who is connected with the McVicker Engineering Company, Minneapolis, Minn., are M. H. Joy of the Joy-Wilson Sales Company, Minneapolis, and A. W. Wright of the Alma Mfg. Company.

The Keystone Iron & Steel Company, Pittsburgh, Pa., has been chartered in Pennsylvania to engage in the sale of iron and steel and scrap. It has \$25,000 capital, those interested being Benjamin Haas, M. B. and Joseph P. Kelley, and E. S. Reilly of Pittsburgh.

The Fairmont Coal Company, Fairmont, W. Va., intends to replace the tipple recently destroyed by fire at Enterprise with a steel structure. Very little machinery was destroyed, as the fire did not reach the power plant except to burn a portion of the roof of the boiler house.

In a recent reference to the lease of the old plant of the Lindermann & Hoverson Company, Milwaukee, Wis., by the Heinrich Company, Milwaukee, an error was made in the products of the latter company. It manufactures loose leaf devices of all kinds.

The Herath & Hultman Mfg. & Equipment Company, Schenectady, N. Y., recently incorporated with a capital stock of \$100,000, has leased the building at 106-108 South Church street, in which it is installing machinery for the manufacture of automatic motor tripping devices, trolley wheel gasoline engine, crank shaft, electrical controller and other devices. The company expects to have its plant in operation by January. Iver Hultman is president; Augustus Herath, vice-president and general manager; David Cary, treasurer; Ira B. Ingram, secretary and sales manager, and William Bushnell, superintendent.

The Youngstown Car Mfg. Company, Youngstown, Ohio, builder of wood and steel cars for iron, steel and industrial uses, is filling an order for 10 small ore cars for use in the Calumet copper region, two standard wooden box cars for the Navy Yard, Philadelphia, Pa., and has a contract for 40 steel skips for shipment to the Panama Canal.

The Vanguard Mfg. Company, Joliet, Ill., has been incorporated with a capital stock of \$25,000, to build high grade automobile accessories.

The Auto-Car Equipment Company, Buffalo, N. Y., manufacturer of motor trucks, self-propelled commercial vehicles, sightseeing cars, &c., will erect and equip a one and two story factory building, 180 x 240 ft., of brick, steel and concrete, on Elmwood avenue near the New York Central Belt Line, to enable it to keep pace with its rapidly increasing business.

The Foster-Glidden Vacuum Cleaning Company, formerly of Chicago, has decided to locate its manufacturing plant and offices in Buffalo, N. Y., and has purchased a factory building, 40 x 135 ft., at 63 Chandler street, in the latter city, which it will equip for the manufacture of its vacuum cleaning apparatus.

The American Automatic Fire Curtain Company of Buffalo, incorporated as the United States branch of the Ford Automatic Shutter Company of Bridgeburg, Ont., to manufacture steel shutters, doors, &c., to operate automatically, has leased factory premises at Letchworth and Grant streets, Buffalo, N. Y., which it will at once equip to manufacture its line of products.

The Automobile & Motor Boat Company, Steubenville, Ohio, a newly organized concern, has under construction a building 48 x 150 ft., which will be used for the manufacture of automobiles, motor boats and gas engines. The plant, it is stated, will be equipped with the best of modern machinery required for this work. Walter D. Strong, formerly with the Winton Motor Carriage Company, Cleveland, is superintendent of the new works.

On its trackage property at West Colfax avenue and Osage street, Denver, Colo., the Vulcan Iron Works Company is building a new shop, 52 x 152 ft., with an annex of 18 x 40 ft., which will be occupied by the Vulcan Sheet Metal Company. The tools and machinery for the equipment of this shop will be moved from the old works.

The report in these columns printed December 3 to the effect that the plant of the General Roofing Mfg. Company at East St. Louis, Ill., had been burned, was erroneous. The company's plant was in no way damaged by fire and its operation was not interfered with.

The Uniform Fibrous Talc Company, Gouverneur, N. Y., has purchased 3 acres of property on which it proposes to erect a 25-ton talc mill.

Sir Christopher Furness, in addressing his employees, now his co-partners, in the shipyards at Hartlepool and West Hartlepool, England, said that he was ready to lay down at once 12 vessels, six in each of the two shipyards. The building of 12 sets of engines will also proceed at once. In answer to recent criticisms by labor leaders, he said that he was prepared to bear any loss that might result from the new co-operative plan.

The Iron and Metal Trades

Tariff Uncertainty the Leading Factor.

All Markets Quiet.

There have been exceedingly few transactions of any significance in the whole range of the Steel industry, and there have been no happenings from which indications of the trend of the markets might be inferred. The uncertainties of tariff revision are becoming a more potent factor, and are expected to keep the markets rather quiet until the outcome can be measured. It is not believed that the situation will be clear before early summer. In the meantime conservative buying by consumers will prevail, since they seem to be generally convinced that revision means a downward readjustment of prices. They urge that there is little danger of being caught when there are an ample supply of raw materials, a liberal reserve of idle manufacturing capacity, an overstocked labor market and transportation facilities adequate for any reasonable strain.

In the meantime the ground swell of steadily improving general conditions and growing courage is expected to lift the consumptive requirements of the country to a steadily higher level.

The Pig Iron markets have been quiet. There have been some moderate transactions in Foundry Iron, a Louisville plant taking 8000 tons of Alabama and Tennessee Irons, while an Indiana radiator concern has contracted for 4000 tons. Some of the Cast Iron Pipe shops who have been fighting the upward tendency steadily are in the market for an aggregate of upward of 40,000 tons, but find the lower silicon Irons quite scarce. There is still an unsatisfied demand for Basic Pig in eastern Pennsylvania, and lots aggregating about 30,000 tons are asked for.

The announcement is made that the Gary plant will begin Steel making between March 15 and April 1, the plant producing Open Hearth Steel exclusively. In the meantime Open Hearth Steel Rails will be made at the South Chicago works of the Illinois Steel Company, so that the requirements of the railroads in the West for Open Hearth Rails will be met.

While a number of large systems are figuring on their Rail requirements for next year nothing definite has yet been done.

It is estimated that the total amount of Fabricated Structural Steel made this year was about 1,050,000 tons. The American Bridge Company fabricated about 100,000 tons more than it sold.

A number of small contracts, aggregating about 9000 tons, are reported this week. Among the new work being figured on is 7000 tons for two buildings for the Prudential Insurance Company.

A somewhat firmer feeling is developing in Iron Bars, owing to the advance in Scrap. The order for 8000 tons of Iron Bars for the Illinois Central Railroad does not seem to be attractive to the mills because of the extended delivery.

The situation in Old Material is somewhat curious. Some very large figures are named as representing the accumulations of dealers in such leading centers as Chicago, St. Louis, Cincinnati and Indianapolis and in the territory east of the Allegheny Mountains. It is generally conceded that what Old Material there is is strongly held; but it is denied that the quantities are as large as reported. Our Chicago correspondent states that good authorities place the stock there at 175,000 tons instead of 300,000 tons, which is freely given in other quarters.

In eastern Pennsylvania there are reported to have been sales aggregating 25,000 tons to 30,000 tons, in addition to the purchase of about 20,000 tons made some time since by a leading plate mill. There have been some rejections of Steel Scrap lately, which, however, have been promptly placed.

While there has been no general domestic buying movement in Copper, the market has stiffened, and Electrolytic is now selling at 14½c. to 14¾c. Lake Copper is closely sold up and is quoted 14¾c. for March and April delivery. Europe has been buying rather freely during the last few days.

A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type,
Declines in Italics.**

At date, one week, one month and one year previous.

	Dec. 30,	Dec. 23,	Nov. 25,	Dec. 25,
PIG IRON, Per Gross Ton:	1908.	1908.	1908.	1907.

Foundry No. 2, Standard, Philadelphia	\$17.25	\$17.25	\$17.25	\$18.25
Foundry No. 2, Southern, Cincinnati	16.25	16.25	16.25	16.25
Foundry No. 2, Local, Chicago	17.00	17.00	17.00	18.00
Basic, delivered Eastern Pa.	16.75	16.75	16.50	17.25
Basic, Valley Furnace.	15.75	15.75	15.50	17.00
Bessemer, Pittsburgh.	17.40	17.40	17.40	18.50
Gray Forge, Pittsburgh.	15.40	15.40	15.15	17.90
Lake Superior Charcoal, Chicago	19.50	19.50	19.50	23.50

BILLETS, &c., Per Gross Ton:

Steel Billets, Pittsburgh.	25.00	25.00	25.00	28.00
Forging Billets, Pittsburgh.	27.00	27.00	27.00	30.00
Open Hearth Billets, Phila.	26.20	26.20	26.20	30.00
Wire Rods, Pittsburgh.	33.00	33.00	33.00	34.00
Steel Rails, Heavy, at mill.	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:

Steel Rails, Melting, Chicago.	<i>15.00</i>	15.50	15.50	12.00
Steel Rails, Melting, Phila.	17.50	17.50	16.25	11.50
Iron Rails, Chicago.	19.50	19.50	19.50	15.00
Iron Rails, Philadelphia.	21.25	21.25	20.50	17.50
Car Wheels, Chicago.	16.00	16.00	16.00	20.00
Car Wheels, Philadelphia.	<i>16.00</i>	16.00	16.50	19.00
Heavy Steel Scrap, Pittsburgh.	17.00	17.00	16.75	12.50
Heavy Steel Scrap, Chicago.	<i>15.50</i>	14.75	15.00	10.75
Heavy Steel Scrap, Phila.	17.50	17.50	16.25	11.50

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia.	1.52	1.52	1.50	1.75
Common Iron Bars, Chicago.	1.50	1.50	1.50	1.75
Common Iron Bars, Pittsburgh.	1.50	1.50	1.50	1.80
Steel Bars, Tidewater, New York	1.56	1.56	1.56	1.76
Steel Bars, Pittsburgh.	1.40	1.40	1.40	1.80
Tank Plates, Tidewater, New York	1.76	1.76	1.76	1.86
Tank Plates, Pittsburgh.	1.60	1.60	1.60	1.70
Beams, Tidewater, New York.	1.76	1.76	1.76	1.86
Beams, Pittsburgh.	1.60	1.60	1.60	1.70
Angles, Tidewater, New York.	1.76	1.76	1.76	1.86
Angles, Pittsburgh.	1.60	1.60	1.60	1.70
Skelp, Grooved Steel, Pittsburgh.	1.45	1.45	1.45	1.70
Skelp, Sheared Steel, Pittsburgh.	1.50	1.50	1.50	1.80

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Black Sheets, No. 28, Pittsburgh.	2.50	2.50	2.50	2.60
Wire Nails, Pittsburgh.	1.95	1.95	1.95	2.05
Cut Nails, Pittsburgh.	1.75	1.75	1.75	2.00
Barb Wire, Galv., Pittsburgh.	2.40	2.40	2.40	2.50

METALS, Per Pound:

	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York.	14.75	14.37½	14.50	13.50
Electrolytic Copper, New York.	14.25	14.12½	14.12½	13.37½
Spelter, New York.	5.15	5.15	5.10	4.30
Spelter, St. Louis.	5.00	5.00	4.95	4.20
Lead, New York.	<i>4.15</i>	4.20	4.37½	3.60
Lead, St. Louis.	<i>4.00</i>	4.05	4.22½	3.50
Tin, New York.	28.85	29.20	30.35	27.00
Antimony, Hallett, New York.	8.12½	8.12½	8.12½	8.50
Nickel, New York.	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York.	\$3.89	\$3.89	\$3.89	\$4.09

Chicago.

FISHER BUILDING, December 30, 1908.—(By Telegraph.)

The year is ending in a profound lull in the Iron and Steel markets. Doubtless part of the indifference and inactivity can be properly ascribed to holiday vacations, stock taking and like influences, but it cannot be ignored that tariff agitation, with its uncertain and unsettling possibilities, is entering into the situation with positive effect. Whatever the outcome of the proposed revision is, whether for better or for worse, there is left in the interim no stable basis upon which to rest plans for the projection of new enterprises intimately connected with tariff schedules in which radical changes are contemplated. At the same time the business of the country cannot wait on these deliberations, and with confidence and energy now back of industrial movements the general anticipation of a gradual growth in volume of business through the coming year is reasonably sure of realization. The transactions of last week were notably lacking in incidents of specific interest. While it is known that some of the Western railroads have the question of 1909 Rail requirements under consideration, no new orders were placed. It is not improbable that their dilatoriness is prompted in part at least by the knowledge that with the large mill capacity now available their wants can be promptly supplied. Specifications on Rail Fastenings, Structural Shapes, Sheets and Steel Bars are fairly good, especially the last, which are quite up to expectations. Old Material is dull and a shade weaker. Attractive concessions are required to move track stuff, although no large amount is coming in. But with the small amount of Scrap being offered by the

railroads, dealers are not looking for much of a recession from present prices. Trading in Pig Iron is restricted almost entirely to car lots, and for the present the market is bare of inquiries. In view of the sluggish movement in all lines, prices exhibit a remarkable degree of stability.

Pig Iron.—Business has dwindled to almost nothing, and the tonnage booked by furnaces in the past week was exceedingly small. For the time being consumers are giving no thought to forward requirements. As matters now stand it appears that melters generally have contracted for enough Iron to carry them through the first quarter at a moderate rate of consumption; and unless business picks up more rapidly than has been anticipated, not much more buying for this period is expected. Continued improvement, however, would develop a considerable amount of second quarter buying, but under present conditions consumers are not now inclined to pay the premium of 50c. a ton generally asked by sellers for this delivery. The slowing up of demand has not affected prices, which on Southern Iron are especially firm at \$13, Birmingham, for No. 2 Foundry, with \$13.50 asked by the majority of producers for second quarter shipments. While not characterized by the uncompromising firmness of the Southern product, Northern Iron is being held reasonably steady at \$17 at local furnaces, which for this immediate district means from \$17.35 to \$17.50 in consumers' yards. The price of \$17.50 is reported as having been done in Milwaukee, which is equivalent to a \$12.50, Birmingham, basis. What kind of a price would be made on third quarter or second half orders is not known, since there are no firm inquiries for such deliveries in the market. The lot of 4000 tons referred to in last report as an inquiry from an Indiana radiator concern was purchased, being equally divided between Northern and Southern furnaces. There are few inquiries of any kind in the market. The following quotations are for January, February and March delivery, f.o.b. Chicago:

Lake Superior Charcoal.....	\$19.50 to \$20.00
Northern Coke Foundry, No. 1.....	17.50 to 18.00
Northern Coke Foundry, No. 2.....	17.00 to 17.50
Northern Coke Foundry, No. 3.....	16.50 to 17.00
Northern Scotch, No. 1.....	18.00 to 18.50
Southern Coke, No. 1.....	17.85 to 18.35
Southern Coke, No. 2.....	17.35 to 17.85
Southern Coke, No. 3.....	16.85 to 17.35
Southern Coke, No. 4.....	16.85 to 16.85
Southern Coke, No. 1 Soft.....	17.85 to 18.35
Southern Coke, No. 2 Soft.....	17.85 to 17.85
Southern Gray Forge.....	15.85 to 16.35
Southern Mottled.....	15.00 to 16.10
Malleable Bessemer.....	17.00 to 17.50
Standard Bessemer.....	17.90 to 18.40
Jackson Co. and Kentucky Silvery, 6 %	19.90 to 20.40
Jackson Co. and Kentucky Silvery, 8 %	20.90 to 21.40
Jackson Co. and Kentucky Silvery, 10 %	22.90 to 23.40

(By Mail.)

Billets and Rods.—The business in Forging Billets reported for the last week included no large lots, but carload orders were a little more numerous. Reassured by the firmer attitude of producers respecting prices, some of the smaller consumers are figuring on contracts for moderate forward requirements, and some business of this kind has been entered. The regular price of \$28.50, base, Chicago, is reported to be well maintained on Forging Billets. Wire Rod specifications hold up well, but there is not much doing in new contracts. We continue to quote as follows: Bessemer, \$33; Basic, \$34; Chain, \$33, all at Pittsburgh.

Rails and Track Supplies.—The market was not enlivened last week by any new developments respecting Rail purchases or new inquiries that would furnish a line on the prospective requirements of 1909. The demand for Standard Rails is confined to small orders coming from minor steam lines and traction roads, one from the latter amounting to 900 tons being among those entered by the Illinois Steel Company. Quite a number of inquiries are coming out from established and projected interurban roads, and the prospects seem to favor a good deal of activity in new construction and in extension and betterments of old systems during the coming year. Specifications for Spikes and Bolts are fairly satisfactory, but, in common with the rest of the market, not much new business in Track Fastenings of any kind was booked. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.15c. to 2.25c., base, Square Nuts, and 2.30c. to 2.40c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., \$26; 20-lb., \$27; 16-lb., \$28; 12-lb., \$29. Standard Sections, Bessemer, \$28; Open Hearth, \$30, on lots of 500 tons and over; on smaller lots, \$2 a ton extra.

Structural Material.—Few of the large Structural contracts will be carried over into the new year, most of those pending having been closed. The 11,000 tons for the new City Hall will be, as has been announced, fabricated by the American Bridge Company, as will in all probability the 1200 tons for the Hart, Shaffner & Marx Building, which will be constructed by Wells Brothers. Plans are now in the hands of fabricators for figures on a new warehouse building to be erected as an addition to Crane Company's Chicago plant, which will require about 2500 tons.

Bids will go in about January 5 on the material required for the construction of the new Pipe foundry to be built at Newcomerstown, Ohio, by James B. Clow & Sons. Part of these buildings will be of Steel and part of reinforced concrete construction, but estimates as to the tonnage of Steel that will go into these buildings have not been completed. The Chicago, Milwaukee & St. Paul Railroad has an inquiry out for 300 tons of bridge material. While little new business has developed in the past week or two, the feeling seems to be that the prospects are favorable to considerable activity in construction work after the turn of the year. Prices from store are 1.95c. to 2c. Mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.78c.; Angles, 3 to 6 in., 1/4-in. and heavier, 1.78c.; larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 6 in. on one or both legs, 1.88c.; Beams, larger than 15 in., 1.88c.; Zees, 3 in. and over, 1.78c.; Tees, 3 in. and over, 1.83c.

Plates.—The existing dullness in Plates has been emphasized by the absorption of interest in holiday diversions. The Plate using industries are all extremely quiet, and the few orders being placed are of unimportant tonnage, individually and collectively. As to prices, conditions are practically unchanged, since concessions of \$1 a ton made by a few mills are still available. We quote mill shipments as follows: Tank Plates, 1/4-in. and heavier, wider than 6 1/4 and up to 100 in. wide, inclusive, car lots, Chicago, 1.78c.; 3-16 in., 1.88c.; Nos. 7 and 8 gauge, 1.93c.; No. 9, 2.03c.; Flange quality, in widths up to 100 in., 1.88c., base, for 1/4-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.88c.; Flange quality, 1.98c. Store prices on Plates are as follows: Tank Plates, 1/4-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.25c.; 72 in. wide, 2.30c. to 2.40c.; No. 8, up to 60 in. wide, 2.10c. to 2.15c.; Flange and Head quality, 0.25c. extra.

Sheets.—The movement in Sheets is not as brisk as it was a few weeks ago, but the exceptional quietness of the past few days is attributed largely to reasonable influences. As soon as the jobbers and manufacturers have finished taking account of stock a better demand is looked for. One of the most encouraging features of the situation at the present time is the more uniform maintenance of prices, which, on mill shipments, are subject to but little, if any, irregularity. We quote mill shipments as follows: Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—Specifications received by the leading producer for Steel Bars and Angles thus far in December amount to 18,000 tons. This continues to be, in this respect, the most satisfactory division of the market. The inquiry of the Illinois Central Railroad for 8000 tons of Iron Bars, mention of which was made in last report, does not seem to be attractive to the mills, because of the requirement for deliveries a year ahead. None of the Iron Bar mills, it is reported, has signified a willingness to accept the business under these conditions on a basis of the present prices. Makers generally would not object to booking part of the tonnage for shipment through the first half, but are not anxious to speculate on the prices of raw material beyond that time. Current business both in specifications and orders is light. Quotations, Chicago, are as follows: Steel Bars, 1.58c., with half extras; Iron Bars, 1.50c.; Hoops, No. 13 and lighter, 1.98c., full extra Hoop card; Bands, No. 12 gauge and heavier, 1.58c., half extras, Steel Bar card, Soft Steel Angles and Shapes, 1.68c., half extras. Store prices are as follows: Bar Iron, 2c. to 2.15c.; Steel Bars, 1.90c. to 2c.; Steel Bands, 1.90c., as per Bar card, half extras; Soft Steel Hoops, 2.25c. to 2.35c., full extras.

Merchant Pipe.—The sharp falling off in orders which characterized the business of last week was not unlooked for, since, even at the best of times, some slowing up is expected toward the end of December. Until the new year is fairly started and plans for new construction begin to develop, no marked improvement is expected. The fact that jobbers can rely upon the prompt execution and shipment of their orders tends to make them indifferent as to the maintenance of surplus stocks. The result is frequent buying in small lots. The following mill discounts are quoted: Black Pipe, 3/4 to 6 in., 73.2; 7 to 12 in., 70.2; Galvanized, 3/4 to 6 in., 63.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 73 per cent. on Black Steel Pipe, 3/4 to 6 in. About three points above these prices is asked for Iron Pipe.

Boiler Tubes.—The only encouraging feature in an otherwise stagnant market for Tubular goods is an increasing demand for Locomotive Tubes. A fair number of orders is coming in from the railroads for Locomotive Tubes needed for repair work. The demand for Merchant Tubes is very light, both as to mill shipments and stock orders. Mill quotations for future delivery, on the base sizes, are as follows: $\frac{2}{3}$ to $4\frac{1}{4}$ in., inclusive, Steel Tubes, 63.2; Iron, 50.2; Seamless, 50.2; $2\frac{1}{2}$ in. and smaller, and lengths over 18 ft., and $2\frac{1}{2}$ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to $1\frac{1}{2}$ in.	.35	.35	.35
$1\frac{1}{2}$ to $2\frac{1}{4}$ in.	.50	.35	.35
$2\frac{1}{2}$ in.	.52 $\frac{1}{2}$	.35	.35
$2\frac{1}{2}$ to 5 in.	.60	.47 $\frac{1}{2}$	.47 $\frac{1}{2}$
6 in. and larger.	.50	.35	..

Merchant Steel.—Business, while holding up to the average of recent weeks, presents no special features of interest, except that specifications for shipment subsequent to January 1, are beginning to come in from jobbers and manufacturers who will by that time have completed their inventories. Shapes required by automobile manufacturers have become an important item in Merchant Steel products, and are furnishing a growing volume of business. We quote as follows: Planished or Smooth Finished Tire Steel, 1.78c.; Iron Finish, up to $1\frac{1}{2}$ x $1\frac{1}{2}$ in., 1.73c., base, Steel card; Iron Finish, $1\frac{1}{2}$ x $1\frac{1}{2}$ in. and larger, 1.58c., base, Tire card; Channels for solid Rubber Tires, $\frac{3}{4}$ to 1 in., 2.08c., and $1\frac{1}{2}$ in. and larger, 1.98c.; Smooth Finished Machinery Steel, 2.08c.; Flat Sleigh Shoe, 1.63c.; Concave and Convex Sleigh Shoe, 1.83c.; Cutter Shoe, 2.05c.; Toe Calk Steel, 2.13c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7 $\frac{1}{2}$ c. to 8c., and still higher prices are asked on special grades. Cold Rolled Shafting in car lots and over, 57 per cent. off; in less than car lots, 52 per cent. off, with carload freight allowed within base territory.

Cast Iron Pipe.—The city of Chicago is in the market for 5500 tons of small Pipe, which is up for letting early this week. The Indianapolis letting for 1500 tons, on which all bids were recently rejected, is readvertised for January 5. It is rumored in trade circles that the 13,000 tons on which all bids were recently declined by the city of Detroit has been secured by the local shops, but there is no confirmation of this report. We quote nominally per ton, Chicago, as follows: Water Pipe, 4 in., \$27; 6 to 12 in., \$26; 16 in. and up, \$25, with \$1 extra for Gas Pipe.

Old Material.—Little trading is being done, and offerings from all sources are light. There were, in fact, not enough transactions last week to furnish a definite criterion as to prices, but the general tone of the market is undoubtedly weaker. With consumers buying sparingly, track sales were usually made at prices disadvantageous to the seller. Purchases of round lots, however, could not be effected at any appreciable shading from the week's quotations. Heavy Melting Steel and Old Steel Rails are slightly lower. A good deal of conjecture as to the amount of stocks held by dealers has been indulged in, and it is believed that some of the estimates made are wide of the mark. It is the opinion of those closest in touch with the situation, that there has not been at any time more than 200,000 tons held in the yards of the various Scrap interests in the city of Chicago. To what extent these were reduced by the recent buying movement cannot be determined, but the probabilities are that the surplus now does not exceed 175,000 tons. The following prices are per gross ton, f.o.b. Chicago:

Old Iron Rails.....	\$19.50 to \$20.00
Old Steel Rails, rerolling.....	16.50 to 17.00
Old Steel Rails, less than 3 ft.....	15.00 to 15.50
Relaying Rails, standard sections, subject to inspection.....	22.50 to 23.50
Old Car Wheels.....	16.00 to 16.50
Heavy Melting Steel Scrap.....	14.50 to 15.00
Frogs, Switches and Guards, cut apart.....	14.50 to 15.00
Mixed Steel.....	12.25 to 12.75

The following quotations are per net ton:

Iron Fish Plates.....	\$17.25 to \$17.75
Iron Car Axles.....	20.50 to 21.00
Steel Car Axles.....	18.50 to 19.00
No. 1 Railroad Wrought.....	14.50 to 15.00
No. 2 Railroad Wrought.....	13.50 to 14.00
Springs, Knuckles and Couplers.....	14.00 to 14.50
Locomotive Tires, smooth.....	14.75 to 15.25
No. 1 Dealers' Forge.....	11.00 to 11.50
Mixed Busheling.....	9.00 to 9.50
Iron Axle Turnings.....	8.50 to 9.00
Soft Steel Axle Turnings.....	8.50 to 9.00
Machine Shop Turnings.....	8.50 to 9.00
Cast Borings.....	7.25 to 7.75
Mixed Borings, &c.....	7.25 to 7.75
No. 1 Mill.....	9.00 to 9.50
No. 2 Mill.....	8.00 to 8.50
No. 1 Boilers, cut to Sheets and Rings.....	10.50 to 11.00
No. 1 Cast Scrap.....	13.50 to 14.00
Stove Plate and Light Cast Scrap.....	12.00 to 12.50
Railroad Malleable.....	13.25 to 13.75
Agricultural Malleable.....	11.50 to 12.00
Pipes and Flues.....	11.00 to 11.50

Metals.—Very little is doing in any of the Metals, the demand being confined to small pick up orders. There are, however, a number of inquiries in the market, which it is believed will result in orders soon after the first of the year. Prices are practically stationary on both Ingots and Old

Metals. Quotations are as follows: Casting Copper, 14 $\frac{1}{4}$ c.; Lake, 14 $\frac{1}{4}$ c. to 14 $\frac{3}{4}$ c., in car lots, for prompt shipment; small lots, $\frac{1}{4}$ c. to $\frac{3}{4}$ c. higher; Pig Tin, car lots, 31 $\frac{1}{2}$ c.; small lots, 34 $\frac{1}{2}$ c.; Lead, Desilverized, 4.45c. to 4.55c., for 50-ton lots; Corrodine, 4.70c. to 4.80c., for 50-ton lots; in car lots, 2 $\frac{1}{4}$ c. per 100 lb. higher; Spelter, 5.10c. to 5.25c.; Cookson's Antimony, 10 $\frac{1}{2}$ c., and other grades, 9 $\frac{1}{4}$ c. to 10 $\frac{1}{4}$ c.; Sheet Zinc is \$7, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13 $\frac{1}{4}$ c.; Heavy Copper, 13c.; Copper Bottoms, 11 $\frac{1}{4}$ c.; Copper Clips, 13c.; Red Brass, 12c.; Yellow Brass, 9 $\frac{1}{2}$ c.; Light Brass, 6 $\frac{1}{4}$ c.; Lead Pipe, 4.35c.; Zinc, 3 $\frac{3}{4}$ c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 26c.

Philadelphia.

PHILADELPHIA, Pa., December 29, 1908.

Holiday conditions prevail and the trade is practically at a standstill. Both producers and consumers are busy with their annual stock takings, and a large number of plants have been shut down to facilitate this work and to make the usual midwinter repairs. Little business of importance is expected to develop until after the turn of the year, but it will no doubt require a somewhat longer period for the trade to get back into the usual routine.

Pig Iron.—Consumers appear willing for the most part to defer purchases until after the turn of the year; transactions therefore have been on a very small scale and the trade on the whole remains quiet. There has been more inquiry for low grade Foundry Irons from Cast Iron Pipe makers, but little tonnage has been closed. In the higher grades sales have been small, confined largely to carload lots for prompt shipment with an occasional sale of somewhat larger quantities for delivery over several months. Notwithstanding moderate purchases, which are attributed entirely to the season, the situation in the market is decidedly strong. With furnaces well sold up, in many instances beyond their capacities for the next few months, sellers refuse to consider business for extended deliveries at the ruling quotations, which for the first quarter range from \$17.25 to \$17.50 for No. 2 X Foundry, the bulk of the business being done close to the higher level. In some cases firm offers at a higher range of prices for the second quarter are reported, but, even at the advance, sellers refuse to consider such business. Little business has been done in Southern Foundry Iron; there have been quite a few inquiries for low grades for Pipe making, but not much is available and prices are being firmly held. The Virginia Foundry grades have not been active, sales during the week being confined largely to small spot lots at full prices. Forge Iron is quiet; operations at the mills are largely suspended, and little new business is being considered. One inquiry for a lot of 600 tons for first quarter delivery is reported. Some business in Basic Iron for first quarter delivery is still pending, as is also a large amount for the second quarter, but no developments have been reported in that grade. The largest individual sale during the week was in Low Phosphorus Iron, 1000 tons of 0.035 per cent. Iron being taken for the first quarter at close to \$21.50, delivered. Some small lots of standard Low Phosphorus were also sold at full prices. Quotations on all grades are firmly held, and for delivery in buyers' yards, eastern Pennsylvania and nearby points, during the first quarter range as follows:

Eastern Pennsylvania, No. 2 X Foundry.	\$17.25 to \$17.50
Eastern Pennsylvania, No. 2 Plain.	16.75 to 17.00
Virginia, No. 2 X Foundry.	17.25 to 17.75
Virginia, No. 2 Plain.	17.00 to 17.25
Gray Forge.	16.00 to 16.50
Basic.	16.75 to 17.00
Low Phosphorus.	21.50 to 21.75

Ferromanganese.—Transactions have been confined to small spot lots, with little business pending for forward delivery. Quotations are unchanged, \$45 to \$46, Baltimore, being named for delivery in the first half of the year.

Plates.—A fair volume of business was reported last week, but so far this week orders have been rather meager. Mills, for the most part, are shut down for repairs and stock taking. The trade, however, is quite hopeful for a resumption of business early next year. Prices are firm and for delivery in this territory range as follows:

	Parts
	Carloads. carload.
	Cents. Cents.
Tank, Bridge and Boat Steel.	1.75 1.80
Flange or Boiler Steel.	1.85 1.95
Commercial Firebox.	1.95 2.00
Marine.	2.15 2.20
Locomotive Firebox Steel.	2.25 2.30
The above are base prices for $\frac{1}{4}$ -in. and heavier. The following extras apply:	
3-16-in. thick.	100 lb. \$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00

Steel Billets.—Business has been light, and little improvement is expected until after the first of the year. Specifications are light, as consumers are not taking in very much material, pending stock taking. For delivery in this territory ordinary Rolling Steel is quoted at \$26.20, with Forging Steel \$28.20, subject to the usual extras for high carbons and special sizes.

Structural Material.—Business has been along very narrow lines. Quite a large volume is under consideration, but little of interest is expected to develop until some time in January. For delivery in this territory prices range from 1.75c. to 1.90c., according to specification.

Sheets.—Practically all the mills in this district are closed for stock taking and overhauling. Orders are small and irregular, and little business of importance is being considered at this time. Prices show no change, ranging as follows for mill shipments, a tenth extra being added for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—Current business is small. Buying is largely suspended, owing to the holidays, but a more active movement is expected after the turn of the year. Prices are firmer; quotations for Refined Iron Bars, delivered in this territory, range from 1.52c. to 1.60c., with Steel Bars 1.55c., and Rerolled Bars 1.50c., delivered.

Coke.—The movement has been light. Some fair contracts for Foundry Coke are pending, and sellers are maintaining prices more firmly. For delivery in this territory quotations range about as follows:

Connellsburg Furnace Coke	\$3.90 to \$4.10
Foundry Coke	4.20 to 4.50
Mountain Furnace Coke	3.50 to 3.70
Foundry Coke	3.80 to 4.10

Old Material.—The market while inactive continues strong. Considerable interest is still being shown in the Heavy Melting Steel situation. Mills are able to pick up small odd lots, as well as off grades, under ruling prices, but holders of any tonnage will not accept business except at top prices. There is still a difference of opinion between buyers and sellers regarding the price of this grade, but sufficient business has not yet come out to test the market. The demand for the other grades of Old Material has been light, and prices for prompt deliveries in buyers' yards in this vicinity are nominally quoted as follows:

No. 1 Steel Scrap and Crops	\$17.50 to \$18.00
Low Phosphorus	20.00 to 21.00
Old Steel Axles	22.50 to 23.00
Old Iron Axles	24.25 to 24.75
Old Iron Rails	21.25 to 21.75
Old Car Wheels	16.00 to 17.00
Choice No. 1 R. R. Wrought	20.00 to 20.50
Machinery Cast	16.00 to 16.50
Railroad Malleable	15.75 to 16.25
Wrought Iron Pipe	15.25 to 15.75
No. 1 Forge Fire Scrap	15.00 to 15.50
No. 2 Light Iron	10.00 to 10.50
Wrought Turnings	14.00 to 14.50
Stove Plate	13.75 to 14.25
Cast Borings	13.00 to 13.50
Grate Bars	14.50 to 15.00

Birmingham.

BIRMINGHAM, ALA., December 28, 1908.

Pig Iron.—The volume of business transacted in this market during the past week is comparatively insignificant. Prospective purchasers have manifested little interest in advanced deliveries, while a few small lots of High Manganese Iron are only considerations reported for prompt shipment. In view of the general suspension of operations for annual inventories the slight demand for spot deliveries is not unexpected, and there has been no perceptible change in the sentiment of any parties concerned in the outlook. The trade is no doubt chiefly interested just at this time in ascertaining the result of the year's operations, and the attitude of producing interests, to await the summary of conditions as will be indicated by the demand to develop, seems warranted. It is generally conceded that the schedule of \$13.50, Birmingham, now being quoted by concerns willing to name figures on second quarter deliveries will ultimately be adopted as the market price. The addition to the producing capacity that has been made from time to time as the result of order-book requirements and the tonnage that is to be carried over into the new year indicate that the situation is well in the hands of the furnace interests, but, as it is not definitely known to what extent speculative purposes are represented by engagements now on record, developments in this connection are to be awaited with interest. A feature also to be taken into consideration is the raw material accumulations on yards of various founders and the extent leading melters are known to have provided for their probable requirements. The actual improvement in the condition of the foundry trade has necessitated the operation of considerably more capacity than at one time anticipated, but there are still a number of idle plants in this district that have been out of operation since the fall of 1907.

Cast Iron Pipe.—With operations practically suspended

at all plants for the usual annual inventory, and the attention of prospective purchasers apparently attracted in other directions, this market is unusually quiet. No lettings of consequence other than has been mentioned are advertised, and the business that has been anticipated is yet to develop. The status of prices is so far unaffected, although the sentiment of sellers indicates a relatively higher basis. The recent advance in prices of Cast Iron Soil Pipe has been maintained, and it is expected that the output will be materially increased soon after the inception of the new year. A feature in the Soil Pipe market is the scarcity of staples both in Pipe and fittings. We quote Water Pipe as follows, carload lots, per net ton, f.o.b. cars here: 4 in. to 6 in., \$25; 8 in. to 12 in., \$24; over 12 in., average, \$23, with \$1 per ton extra for Gas Pipe. These quotations are probably shaded on large municipal contracts.

Old Material.—There has been no improvement in the demand since last report. The cleaning up at foundries and furnaces now in process will no doubt add materially to offerings for dealers' stocks, which are in some cases practically depleted. Among the latest offering to dealers, 100 tons of Light Cast and approximately 300 tons of Slag are the principal consideration. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here, which are believed to be firm:

Old Iron Rails	\$15.00 to \$15.50
Old Iron Axles	16.00 to 17.00
Old Steel Axles	13.50 to 14.00
No. 1 Railroad Wrought	14.00 to 14.50
No. 2 Railroad Wrought	11.00 to 11.50
No. 1 Country Wrought	11.00 to 11.50
No. 2 Country Wrought	9.50 to 10.00
No. 1 Machinery	11.50 to 12.00
No. 1 Steel	10.50 to 11.00
Stove Plate and Light Cast	9.50 to 10.00
Cast Borings	5.00 to 5.50
Standard Car Wheels	13.50 to 14.00
Tram Car Wheels	12.00 to 12.50

Pittsburgh.

PARK BUILDING, December 30, 1908.—(*By Telegraph.*)

Pig Iron.—Some new inquiry for Pig Iron has come up during the week, for delivery in first quarter and first half of next year, but as yet very little actual business has been closed. The Grand Crossing Tack Company, Chicago, is in the market for 4000 tons of Basic Iron, for delivery in first quarter, but this will hardly go to any of the Valley furnaces, the freight rate to Chicago being against them. The Iron will likely be supplied by some of the furnaces near Chicago. A local interest has bought 600 tons of Standard Bessemer Iron for delivery in April, May and June on the basis of about \$16.60, Valley, or \$17.50, Pittsburgh. Foundry and Forge Iron are very quiet. We quote Standard Bessemer for first quarter, at \$16.50; Malleable Bessemer, \$16; Basic, \$15.75; No. 2 Foundry, \$15.50, and Gray Forge, \$14.50, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

Steel.—There is practically no new demand for Billet and Sheet and Tin Bars, but consumers are specifying quite liberally against contracts, and are taking out about as much tonnage this month as in November. It is claimed that regular prices on Steel are being maintained. We quote Bessemer and Open Hearth Billets, 3 $\frac{1}{4}$ in. and larger, up to and including 0.25 carbon, \$25; 0.26 to 0.60 carbon, \$1 extra; over 0.60 carbon, \$2 extra, all f.o.b. Pittsburgh. For Wheeling, Martin's Ferry, Follansbee, Newcastle, Sharon, Steubenville and Washington (Pa.) delivery, half the freight, or 50c. additional, is charged. Sheet and Tin Bars in random lengths are \$27.50, f.o.b. Pittsburgh. Forging Billets take \$2 advance over Rolling Billets.

(*By Mail.*)

The last week of 1908 finds the Iron and Steel situation about as quiet as it has been at any time in the year. It is known, however, that nearly all consumers are holding up orders until after the first of the year. There is some inquiry for Basic and Bessemer Pig Iron for first quarter delivery. Billets and Sheet and Tin Bars are quiet, and no more large orders for Rails have been given out. The flurry in the Scrap trade continues; the available supply in the large centers seems to be in the hands of dealers who are strong enough to hold it for higher prices. The Coke trade is quiet; prices on prompt Coke, and probably on Coke for first half of the year delivery, are slightly weaker. While the demand for Finished Iron and Steel has been light all the month, this was expected, and is not taken to mean that the Steel trade is going back again, but simply that consumers are keeping out of the market until after the turn of the year.

Ferromanganese.—The consumption is heavier, and the available supply for prompt shipment seems limited. The Carnegie Steel Company, which does not sell Ferromanganese in the open market, is running short in its supply, and is blowing in No. 2 Isabella Furnace to-day on this product

for its own supply. The stack will make about 6000 tons a month. Prices are firm, and we quote \$0 per cent. foreign at \$44.50 to \$45, seaboard, the freight rate to Pittsburgh being \$1.95 a ton.

Ferrosilicon.—We note a sale of two cars, or about 50 tons, of 50 per cent., at about \$63.25, Pittsburgh. We quote 50 per cent. Ferrosilicon for first quarter delivery, at about \$63, Pittsburgh.

Wire Rods.—Some fairly large inquiries for both Chain Rods and Wire Rods are in the market, and consumers are specifying against contracts at a fairly satisfactory rate. We continue to quote Bessemer Rods at \$33, Chain Rods \$33, and Basic \$34, Pittsburgh.

Muck Bar.—The market is firm, but the demand is very quiet. Some buying is expected after the first of the year. We quote best grades of Muck Bar, made from all Pig Iron, at \$28 to \$28.50, Pittsburgh.

Skelp.—Little is doing in Steel Skelp, but the demand for Grooved and Sheared Iron Skelp, particularly the latter, is very active, and the mills rolling Sheared Iron Plates are filled up for several months ahead, and are very firm as to prices. We quote: Grooved Steel Skelp, 1.45c. to 1.50c.; Sheared Steel Skelp, 1.50c. to 1.60c.; Grooved Iron Skelp, 1.75c. to 1.80c., and Sheared Iron Skelp, 1.90c. to 1.95c., Pittsburgh.

Steel Rails.—The anticipated orders for Rails from the Baltimore & Ohio, New York Central and other lines that were expected to follow the Pennsylvania Railroad's lead in buying have not been placed. It is confidently expected, however, that some large contracts will come out soon. Manufacturers believe that the coming year will be a good one in the Rail trade, and are hopeful that it will far exceed 1908. The estimated quantity of Rails actually shipped out on orders by the mills in 1908 is given as 1,600,000 tons, but this is not official. The Carnegie Steel Company received in the past week new orders and specifications against contracts for about 1500 tons of Light Rails. This year has been fairly good in the Light Rail trade, especially the last three or four months. Makers of Light Rails rerolled from Old Rails continue to sell at \$2 to \$3 a ton under Rails rolled from Billets. Prices on new Light Rails, rolled from Billets, are as follows: \$25 for 25 to 45 lb. Sections, with \$1 advance for 20 lb., \$2 advance for 16 lb., and \$3 advance for 12 lb. Standard Sections are \$28, at mill, and Angle Splice Bars, 1.65c., at mill.

Structural Material.—The local situation is very quiet. Interest attaches to the report that the German Lutheran Church, of this city, will erect a church and office building combined, plans for which have been made, and if put through will require about 10,000 tons. The trade is skeptical of the project being consummated. A good deal of new business is held up, which is expected to be placed early in the new year. We quote, f.o.b. mill, Pittsburgh: I-Beams and Channels, 3 to 15 in., inclusive, 1.60c., net; I-Beams over 15 in., 1.70c., net; H-Beams over 8 in., 1.80c.; Angles, 3 to 6 in. inclusive, $\frac{1}{4}$ in. and up, 1.60c., net; Angles, over 6 in., 1.70c., net; Angles, 3 x 3 in. and up, less than $\frac{1}{4}$ in., 1.50c., base, half extras, Steel Bar card; Tees, 3 in. and up, 1.65c., net; Zees, 3 in. and up, 1.60c., net; Angles, Channels and Tees under 3 in., 1.50c., base, half extras, Steel Bar card; Deck Beams and Bulb Angles, 1.90c., net; Hand Rail Tees, 3c., net; Checkered and Corrugated Plates, 3c., net.

Sheets.—New orders for Sheets this month show a falling off as compared with November; but this was expected, as jobbers do not seem anxious to make contracts until after the first of the year, and orders are confined mostly to small lots for actual needs. Some slight shading in prices is still being done, from \$1 to \$2 a ton, on Corrugated and Galvanized Sheets. For shipment from mill regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets, Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c.; No. 28, Painted Roofing Sheets, \$1.75 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, for $2\frac{1}{2}$ -in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Plates.—In addition to the contract for 1500 80,000-lb. Coke cars placed by the Pittsburgh & Lake Erie Railroad some time ago with the American Car & Foundry Company, the Plates and Shapes for which are being rolled by the Jones & Laughlin Steel Company, the same road has ordered 500 all-Steel 100,000-lb. hopper cars of the Standard Steel Car Company, for which the Carnegie Steel Company will furnish the Plates and Shapes, about 6000 tons, and also about 2000 Axles. The general demand for Plates is quiet. The Carnegie Steel Company will soon finish rolling the order for Plates for the Springfield, Mass., water works, but

has not yet received specifications for the 22,000 tons of Plates or more for the Brooklyn water works job. Prices are still being shaded by some mills about \$1 to \$2 a ton. Regular prices are as follows: Tank Plates, $\frac{3}{4}$ in. thick, 6 $\frac{1}{4}$ in. up to 100 in. wide, 1.60c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, Ship and Bridge quality, $\frac{3}{4}$ -in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered $\frac{1}{4}$ -in. Plate. Steel Plates over 72 in. wide must be ordered $\frac{1}{4}$ -in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on Plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under $\frac{1}{4}$ -in. to and including 3-16-in. Plates	
on thin edges.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates..	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Locomotive Firebox Steel.....	.50
Shell grade of Steel is abandoned.	
For widths over 100 in. up to 110 in.....	.05
For widths over 110 in. up to 115 in.....	.10
For widths over 115 in. up to 120 in.....	.15
For widths over 120 in. up to 125 in.....	.25
For widths over 125 in. up to 130 in.....	.50
For widths over 130 in.....	1.00
TERMS.—Net cash 30 days. Pacific Coast base, 1.50c., f.o.b. Pittsburgh.	

Tin Plate.—The demand is pretty well over, but the Tin Plate mills are pretty comfortably fixed with orders for shipment through the first quarter. The Tin Plate trade this year has been quite satisfactory considering general conditions, but is expected to be much better next year. We are advised that regular prices are being well maintained. We quote: \$3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Iron and Steel Bars.—For Iron Bars the demand has been accelerated to some extent by the active condition of the Scrap market for the past three or four weeks, consumers being more disposed to contract ahead in view of possible higher prices for Iron Bars in the near future. As a result of this, some good sized contracts for shipment over the first quarter and first half have recently been placed with the mills. Orders for Steel Bars are few, but specifications against contracts are being received in fairly good volume, although not so heavy this month as in November. We quote Iron Bars at 1.42c., Pittsburgh, for Western shipment, or 1.60c., Chicago, while the price for delivery in the Pittsburgh District is 1.50c. Iron Bars that have a high reputation in the trade and rolled from strictly Muck Bar stock, such as Zug, Lockhart and a few others, are held at about 1.90c., at mill. Steel Bars are firm at 1.40c., Pittsburgh, for base sizes.

Hoops and Bands.—As yet the mills have not fixed prices for 1909 delivery, but this will likely be done in the first or second week in January. Present prices are as follows: Steel Hoops, 1.80c., base, full Hoop card prices; Steel Bands, 1.40c., base, half Steel card extra, all f.o.b. cars, Pittsburgh, in carload lots, for delivery during 1908.

Railroad Spikes.—It is expected that two or three of the leading railroads will be in the market with large inquiries for Spikes early in the year. The demand for the small sizes is quite active, the mills having work ahead for three or four weeks. Prices are firm, and we quote: Standard sizes, 4 $\frac{1}{2}$ x 9-16 in., at \$1.70, and the smaller sizes at \$1.80 per 100 lb., in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

Merchant Steel.—Specifications against contracts this month were only fair, and show a falling off as compared with last month. More activity in this trade is expected after the first of the year, when consumers will have finished taking inventory. We quote Cold Rolled Shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads, delivered in base territory. Regular prices on Merchant Steel, which are being shaded to some extent, are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 1.90c. to 1.95c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher prices being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron finish, 1 $\frac{1}{2}$ x $\frac{1}{2}$ in. and heavier, 1.40c.; under 1 $\frac{1}{2}$ in., 1.55c. Planished Tire Steel is 1.60c., all f.o.b., at mill.

Spelter.—The demand is light, and prices are only fairly strong. We quote prime grades of Western at 4.95c., East St. Louis, equal to 5.07 $\frac{1}{2}$ c., Pittsburgh.

Merchant Pipe.—No more new orders for line Pipe have been placed since our last report, but we are advised that the Ohio Fuel Supply Company is in the market for

about 80 miles of 16-in., and may possibly buy 25 miles of 8-in. Other large projects are under way, and the demand for line Pipe promises to be very heavy for the larger sizes in the new year. Orders booked by the mills for merchant sizes in December were not quite as heavy as in November, but the month is regarded as quite satisfactory. It is estimated that close to 65 per cent. of the Pipe capacity is active at present. It is claimed that prices on both Iron and Steel Pipe are being absolutely maintained. If Sheared Iron Plates continue to advance, higher prices on Iron Pipe in the future are not unlikely. Discounts on Steel Pipe, $\frac{3}{4}$ to 6 in., to the large trade, are 75 and 5 per cent. off list, while a few of the very largest jobbers, that have mill connections, are given 76 and 5 per cent. off list. Regular discounts are as follows:

Merchant Pipe.

	Jobbers, carloads.	Steel.	Galv.
	Black.	%	%
$\frac{1}{4}$ to $\frac{1}{4}$ in.	.67	51	
$\frac{3}{8}$ in.	.69	55	
$\frac{1}{2}$ in.	.71	59	
$\frac{3}{4}$ to 6 in.	.75	65	
7 to 12 in.	.72	57	
Extra strong, plain ends:			
$\frac{1}{8}$ to $\frac{3}{8}$ in.	.60	48	
$\frac{1}{2}$ to 4 in.	.67	55	
$4\frac{1}{2}$ to 8 in.	.63	51	
Double extra strong, plain ends:			
$\frac{1}{2}$ to 8 in.	.56	45	

Discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
	%	%
$\frac{1}{4}$ to $\frac{1}{4}$ in.	.65	
$\frac{3}{8}$ in.	.67	53
$\frac{1}{2}$ in.	.69	57
$\frac{3}{4}$ to 6 in.	.73	63
7 to 12 in.	.70	55
Extra strong, plain ends:		
$\frac{1}{8}$ to $\frac{3}{8}$ in.	.58	46
$\frac{1}{2}$ to 4 in.	.65	53
$4\frac{1}{2}$ to 8 in.	.61	49
Double extra strong, plain ends:		
$\frac{1}{2}$ to 8 in.	.54	43

Boiler Tubes.—Only a small order is being occasionally placed by the railroads for Locomotive Tubes for repair work. It has been suggested that an advance in prices on Locomotive Tubes by the mills might have the effect of increasing the demand. Only small lots of Merchant Tubes are being ordered. The whole Tube market, in fact, is very dull. For Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to $1\frac{1}{2}$ in.	.42	47
$1\frac{1}{2}$ to $2\frac{1}{4}$ in.	.42	59
$2\frac{1}{2}$ in.	.47	61
$2\frac{1}{4}$ to 5 in.	.52	65
6 to 13 in.	.42	59
12 in. and smaller, over 18 ft. long, 10 per cent. net extra.		
$2\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.		

Iron and Steel Scrap.—There seems to be something of a deadlock on between dealers and consumers of Scrap, and as a result very little material is being sold by dealers, and in this respect the market is quiet. However, the available stocks in large Scrap centers, such as Pittsburgh, Chicago, Cleveland, Indianapolis and other cities, are strongly held and prices are very firm. Dealers insist they are in position to maintain the market on its present basis for an indefinite length of time and are not disposed to make even slight concessions to secure new business. We quote: Heavy Steel Scrap for Pittsburgh, Steubenville, Sharon, Leechburg or Monessen delivery, \$17; Cast Iron Borings, \$11.50 to \$11.75; Bundled Sheet Scrap, \$15 to \$15.25; No. 1 Busheling Scrap, \$14.75 to \$15; No. 2, \$10.75 to \$11; No. 1 Cast Scrap, \$15 to \$15.25; Iron Axles, \$24.50 to \$25; Sheet Bar Crop Ends, \$21 to \$21.25. Rerolling Rails, \$18, delivered, Cambridge, Ohio, or \$18.50, delivered, Cumberland, Md.; Low Phosphorus Melting Stock 0.04 and under, \$18.50 to \$19; Steel Axles, \$19.50 to \$20; Grate Bars, \$13 to \$13.25; Machine Shop Turnings, \$12.50 to \$13; Railroad Wrought Scrap, \$17 to \$17.25; Railroad Malleable Scrap, \$15.50 to \$15.75; Iron Rails, \$18.75 to \$19, and Locomotive Tires, \$17.50 to \$17.75.

Coke.—The output of Coke has increased considerably in the past two or three weeks, due to heavy rains relieving the shortage of water. The available supply of Coke for prompt shipment is larger, with the result that prices on both Furnace and Foundry Coke for spot delivery are easier. We quote Connellsville Furnace Coke for prompt delivery at \$1.75 to \$1.80 per net ton, at oven, while on contracts for first half \$1.90 is now being quoted with reports that two large consumers have recently covered their requirements for Furnace Coke for first half of the year at a slightly lower price. Strictly Connellsville 72-hr. Furnace Coke on contracts for first half of the year is held at \$2.40 to \$2.50, while for prompt shipment \$2.25 or lower could be done. Furnace and Foundry Coke made in the Klondike and other outside regions can be bought on contracts and for prompt shipment at slightly lower prices than are named above. The output of Coke in the two Connellsville regions last week

was 251,903 tons, an increase over the previous week of 8600 tons.

The offices of Richardson & Co., Inc., dealers in New and Relaying Steel Rails, have been removed from the Westinghouse Building to 1211 Fulton Building, Pittsburgh.

St. Louis.

ST. LOUIS, Mo., December 28, 1908.

Announcement is made that plans have been arranged for the erection at an early date of a large department store building, to be located on Olive street, and represent a cost exceeding \$2,000,000. Plans are under consideration for the completion of the 18-story bank and office building of the National Bank of Commerce, Broadway, between Olive and Pine streets. The contemplated improvements and the completion of the bank building, including the new structure, will cost approximately \$8,000,000.

Coke.—Except for inquiries and some business in small lots for immediate shipment, the market is ruling very quiet, and these conditions are expected to obtain for the coming week. After New Year's, the leading sellers will look for a marked improvement in conditions. We quote for prompt or December shipment 72-hr. Foundry \$2.25, at ovens, Connellsville; for shipment over first half of 1909, \$2.25 to \$2.65.

Pig Iron.—The dullness incident to the holiday season has been more pronounced during the week, but as this was anticipated it does not affect prices. The leading sellers state they note evidences of a heavy consumption in all branches of the foundry trade, and the large purchases of Northern and Southern Iron last week by the leading car-builders is having a strengthening effect on the market. It is believed the increased requirements of the railroads indicate that general business is increasing in volume, and that the improvement is likely to continue. We quote Southern No. 2 Foundry, Birmingham, as follows: Immediate shipment and first quarter of 1909, \$13; first half of 1909, \$13.25; second quarter, \$13.50; Ohio Iron, \$15.50 to \$16 for No. 2 at Ironton; Northern Silvery, 8 per cent. Silicon, \$18.50 to \$19, at Jackson County furnaces.

Old Material.—With the Iron trade simply marking time, dealers in Scrap Iron could not reasonably expect activity in their line, and during the week not only has there been no demand from rolling mills and foundries, but there has been very little doing with the dealers. No offerings are posted by the railroads. While in the absence of business quotations are nominal, the near approach of the season for a large movement brings some assurance of prices being maintained. It is proper to note an exception—that of Relaying Rails—for which there is an active demand from the West and Southwest. We quote as follows, per gross ton, f.o.b. St. Louis:

Old Iron Rails	.....	\$17.00 to \$17.50
Old Steel Rails, rerolling	.....	14.75 to 15.00
Old Steel Rails, less than 3 ft.	.....	14.25 to 14.75
Relaying Rails, standard sections, subject to inspection	.....	24.00 to 24.50
Old Car Wheels	.....	16.50 to 17.00
Heavy Melting Steel Scrap	.....	14.75 to 15.25
Frogs, Switches and Guards, cut apart	.....	14.75 to 15.25
Mixed Steel	.....	10.25 to 10.75

The following quotations are per net ton:

Iron Fish Plates	.....	\$16.00 to \$16.50
Iron Car Axles	.....	20.00 to 20.50
No. 1 Railroad Wrought	.....	14.50 to 15.00
No. 2 Railroad Wrought	.....	13.50 to 14.00
Railway Springs	.....	13.00 to 13.50
Locomotive Tires, smooth	.....	13.50 to 14.00
No. 1 Dealers' Forge	.....	11.50 to 12.00
Mixed Borings	.....	7.00 to 7.50
No. 1 Boilers, cut to Sheets and Rings	.....	10.00 to 10.50
No. 1 Cast Scrap	.....	13.50 to 14.00
Stove Plate and Light Cast Scrap	.....	10.50 to 11.00
Railroad Malleable	.....	12.00 to 12.50
Agricultural Malleable	.....	10.50 to 11.00
Pipes and Flues	.....	10.50 to 11.00
Railroad Sheet Scrap	.....	11.50 to 12.00
Railroad Grate Bars	.....	11.50 to 12.00
Machine Shop Turnings	.....	9.50 to 10.00

Lead, Spelter, Etc.—For Lead, there are a good many inquiries, and but little actual business passing, and the market is quiet, at 4c. to 4.02½c. Mining interests are dull, and there is not much Lead or Zinc production going on. We quote Joplin basis, \$24.50 to \$25, per 1000 lb. Spelter is in quite active demand, by both galvanizers and brass founders. The market range is as follows: For Galvanizing, 5.10c. to 5.12½c.; brass manufacture, 5.25c. to 5.50c. Very little business is being booked on account of the holiday season, and the close of the year, but the volume of inquiries would seem to indicate considerable activity after New Year's.

The Scullin-Gallagher Iron & Steel Company reported the contract for cast Steel bolsters for 500 fifty-ton coal cars to be built by the Cambria Steel Company. Also cast Steel bolsters for 500 thirty-ton cars for the Delaware, Lackawanna & Western Railroad Company.

The American Car & Foundry Company states that it has begun work on 800 new cars at its plant at Madison, Ill.

Cincinnati.

CINCINNATI, OHIO, December 30, 1908.—(By Telegraph.)

The closing days of 1908 find the local Iron and Steel market quiet, but full of promise. This promise is best exemplified by the machinery manufacturing lines probably, as inquiries from the large railroad and other corporations needing tools and shop equipment suggest a good opening for the first quarter. The Pig Iron inquiry is light, the largest consumers having filled their requirements for the first half as a rule, the greater part, at least, when Iron was lower, a few weeks ago, and furnaces are reluctant to quote on last half requirements except at prohibitive prices. In finished Iron and Steel no item is in strong demand, and dealers and jobbers alike are busied with inventories. Scrap dealers and consumers are quite as far apart as at any time since the election; present quoted prices being regarded as prohibitive by consumers, who are buying only for actual needs.

Pig Iron.—Most selling agencies are awaiting notice of routine changes, results of inventories and new year orders from their furnace chiefs, and little new business has come out, although one local agency checks up sales for the week ending the 26th inst. at 3580 tons, mostly in small lots. There have been no changes in price. Low grades still have the call, a late sale of Southern Forge bringing \$12, Birmingham, and nothing better than \$13, Birmingham, for No. 2 Foundry for the first half is heard here. Many rumors of new furnace activity for the first quarter, coupled with reports of large stocks on furnace yards, tend to reassure consumers against any phenomenal advance in the near future. There are some inquiries from Indiana ranging from a few carloads to 500 and 600 ton lots. A local foundry which wanted about 750 tons of No. 3 Foundry, deliveries February to May, has deferred the purchase temporarily. It is understood here that the plumbing supply establishment inquiring for 8000 tons for its Louisville plant has secured it, taking a considerable lot from the Tennessee furnace whose Iron it has used largely in former years, 1000 tons from a Tennessee furnace making an extra fluid softener, 1000 tons of Foundry Iron from Woodstock, and a total of about 4000 tons divided between two of the largest Alabama interests. The price was on a basis of \$13, Birmingham, and deliveries in second quarter. It is stated that a considerable part of the tonnage wanted by the large car manufacturing concern for its Detroit plant, mentioned last week, has been secured, 1000 tons of No. 4 Foundry coming from the South and at a price around \$12.25, Birmingham. Some late inquiries are for a special analysis Iron wanted by Pittsburgh parties. Stove makers are not much in evidence, the latest sale of any special importance reported here being one of 6000 tons of Nos. 2 and 3 Foundry to a large St. Louis establishment on a basis of \$13, Birmingham, deliveries extending to November, 1909. Late visitors to Jackson County report a total of about 10,000 tons on furnace yards there. Globe Furnace is scheduled to go in blast January 6. The price is firm at \$18.50, at furnace for 8 per cent. Silicon, with a disposition to advance the spread above 10 per cent. to \$1. Warner Furnace, which blew out on the 24th inst. for relining and repairs, is scheduled to go in blast March 1 and will continue on Foundry Iron. Embreeville Furnace at Embreeville, Tenn., which blew out November 20 for repairs, is active again, having been blown in December 19. For first half delivery, based on freight rates of \$3.25 from Birmingham and \$1.10 from the Hanging Rock District, we quote delivered Cincinnati as follows:

Southern Coke, No. 1.....	\$16.75 to \$17.25
Southern Coke, No. 2.....	16.25 to 16.75
Southern Coke, No. 3.....	15.75 to 16.25
Southern Coke, No. 4.....	15.25 to 15.75
Southern Coke, No. 1 Soft.....	16.75 to 17.25
Southern Coke, No. 2 Soft.....	16.25 to 16.75
Southern Coke, Gray Forge.....	14.75 to 15.25
Southern Mottled.....	14.50 to 15.00
Ohio Silvery, 8 per cent. Silicon.....	19.60 to 20.10
Lake Superior Coke, No. 1.....	17.10 to 17.60
Lake Superior Coke, No. 2.....	16.60 to 17.10
Lake Superior Coke, No. 3.....	16.10 to 16.60
Standard Southern Car Wheel.....	22.25 to 23.25
Lake Superior Car Wheel.....	21.75 to 22.75

(By Mail.)

Coke.—Spot Coke is a trifle weaker. Spot Furnace brands from the Connellsville region are obtainable as low as \$1.65, at oven, and ranging to \$1.85 on contract. Spot Foundry grades are quotable at about \$2 and \$2.15 to \$2.50, at oven, on contract. Pocahontas Foundry ranges from about \$2.15 to \$2.25, spot and contract, and Furnace grades \$1.85 to \$2. Not much buying is expected before the second week in January, and not a great deal then, as most contracting has been done for the first half or the whole year, for furnace use. If the jobbing foundry business picks up, as it is expected to do early in the year, there will be some demand for the 72-hr. grades.

Finished Material.—It is very dull in the retail and jobbing lines, although some specialty concerns, for instance, those straightening and cutting Wire and handling twisted Steel Bars for concrete work, are enjoying a fair run of business. The demand for coated Nails for use by box makers is good. The reported purchase of 3500 tons of Iron Bars by the Louisville & Nashville Railroad for use in build-

ing new cars has stimulated interest in that commodity in this market. The Andrews Steel Company is now running all 10 Finishing mills. The Sheet mills are turning out 800 to 900 tons per week. The Steel plant is running two-thirds capacity and expects within 30 days to be running full. The present output is about 225 tons a day of Sheet Bars and Billets. Dealers are quoting to the trade as follows, f.o.b. Cincinnati: Iron Bars, carload lots, 1.5c., base, with half extras; small lots from store, 1.85c., base, half extras; Steel Plates, carload lots, 1.75c., base, with half extras; small lots from store, 1.85c., base, half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, 1/4-in. and heavier, carload lots, 1.85c.; small lots from store, 2c.; Blue Annealed Sheets, heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; No. 12, carload lots, 2c.; small lots from store, 2.30c.; Sheets (Light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Steel Tire, 4-in. and heavier, carload lots, 1.95c.; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

Old Material.—There is no life in the Scrap market and no interest is displayed in any item. Dealers have forced prices to such heights that consumers have apparently retired for the time being. Although Heavy Melting Steel is quoted as high as \$15.50 and \$16, some heavy consumers insist that they have bought quite recently at \$14 and \$14.50. All mills in this vicinity are now pretty well stocked up on Scrap, and about all the movement there is in this commodity the closing days of the year is between dealers, who quote, f.o.b. Cincinnati, about as follows:

No. 1 R. R. Wrought, net ton.....	\$14.50 to \$15.50
Cast Borings, net ton.....	6.50 to 7.50
Heavy Melting Steel Scrap, gross ton..	14.50 to 15.00
Steel Turnings, net ton.....	6.00 to 7.00
No. 1 Cast Scrap, net ton.....	13.00 to 14.00
Burnt Cast, net ton.....	9.00 to 10.00
Old Iron Axles, net ton.....	16.75 to 17.75
Old Iron Rails, gross ton.....	15.00 to 16.00
Old Steel Rails, short, gross ton.....	13.00 to 14.00
Old Steel Rails, long, gross ton.....	13.00 to 14.00
Relaying Rails, 56 lb. and up, gross ton	21.50 to 22.50
Old Car Wheels, gross ton.....	15.50 to 16.50
Low Phosphorus Scrap, gross ton.....	14.00 to 15.00

Buffalo.

BUFFALO, December 29, 1908.

Pig Iron.—A continuation of the quiet tone prevailing the past week or two marks the closing week of the year, but signs of good business for the new year are appearing above the horizon, and the general feeling among furnace men is that the market is on the up grade and that increasing activity will be manifest after the middle of January. Prices are firm and unchanged. We quote as follows, f.o.b. Buffalo:

No. 1 X Foundry.....	\$16.50 to \$17.00
No. 2 X Foundry.....	16.00 to 16.50
No. 2 Plain.....	15.50 to 16.00
No. 3 Foundry.....	15.50 to 16.00
Gray Forge.....	15.50 to 15.75
Basic.....	16.00 to 16.50
Malleable Bessemer.....	17.00 to 17.50
Charcoal.....	20.75 to 21.25

Old Material.—There is practically no demand from consumers and the market has lapsed into a state of dullness, which is not likely to be much changed until the end of the inventory period. Prices have softened appreciably. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy Melting Steel Scrap.....	\$15.25 to \$15.75
No. 1 Railroad Wrought.....	16.25 to 17.25
No. 1 Railroad and Machinery Cast Scrap.....	15.00 to 15.50
Old Steel Axles.....	18.50 to 19.50
Old Iron Axles.....	22.00 to 22.75
Old Car Wheels.....	16.00 to 16.75
Railroad Malleable.....	14.00 to 14.50
Boiler Plate.....	12.50 to 13.00
Locomotive Grate Bars.....	12.25 to 12.75
Pipe.....	12.25 to 12.75
Wrought Iron and Soft Steel Turnings.....	9.00 to 9.50
Clean Cast Iron Borings.....	8.50 to 9.00
No. 1 Busheling Scrap.....	14.00 to 14.50

Finished Iron and Steel.—Quiet conditions continue. The placement of considerable new business is evidently held awaiting the turn of the year, making the general run of new orders somewhat lighter than two or three weeks ago. The volume is very satisfactory, however, compared with last year, and one of the largest local interests reports the tonnages for Bars and small Shapes specified on contracts the current week to have been the heaviest for some time. No large business in Structural Shapes is in evidence, but a few small contracts have been placed, including the addition to the Schreiber Brewing Company's plant, about 100 tons, secured by the George Kellogg Structural Company, Buffalo, and the Structural Material and Ornamental Ironwork for the new inclined railroad to be built in Prospect Park, New York State Reservation, at Niagara Falls, requiring between 200 and 300 tons, awarded to Chas. E. Fraser & Co., New York, in the general contract for entire work erected complete.

Cleveland.

CLEVELAND, OHIO, December 29, 1908.

Iron Ore.—Outside of the reservation of a considerable tonnage of Old Range Bessemer Ore by several consumers, which was noted last week, there has been no activity in the Ore market. The merchant Ore firms appear in no hurry to have a buying movement start, and will let the furnace interests take their time about coming into the market. It is probable that nothing will be done about fixing next season's prices until consumers make inquiries and seem about ready to cover for their 1909 requirements. Little Ore is being shipped from the docks, and as furnace yards are well filled the movement from the docks from now to early spring is expected to be light. Ore prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range Non-Bessemer, \$3.70; Mesaba Non-Bessemer, \$3.50.

Pig Iron.—The market is exceedingly quiet. Only one important inquiry for Foundry Iron came out last week—for 1000 tons of No. 2 for delivery in this territory during the first quarter. The only sales reported are a few small lots. There is no demand whatever for spot Iron. In cases where foundries are running short they are asking furnaces to anticipate shipments on contracts. That consumers did not all cover for their full requirements for the first half in the recent buying movement is indicated by the fact that some of them have come into the market with inquiries for additional quantities, but these as yet have not become orders. Some resale Iron was recently offered at prices slightly below the market, but this appears to have all been disposed of. Prices are firm. Local furnaces quote No. 2 Foundry for first quarter and first half delivery at \$16, at furnace, for outside shipment, and \$16.50 to \$16.75, delivered, Cleveland. Iron is being taken freely on contracts and furnaces are shipping as much Iron as they are producing. While furnace interests are well sold up for the first quarter and feel satisfied with the situation at present, some of them are beginning to feel more disposed to look for additional contracts for second quarter delivery. Some inquiries continue to come in for Basic Iron, one received during the week being for 6000 tons for delivery in the first half. A local interest is holding firm at \$16, at furnace, for Basic. There is but little inquiry for Malleable Iron. None of the large consumers are as yet coming into the market. For the first quarter and first half we quote, delivered, Cleveland, as follows:

Bessemer		\$17.40
Northern Foundry, No. 1	\$16.90 to	17.40
Northern Foundry, No. 2	16.50 to	16.90
Northern Foundry, No. 3	16.00 to	16.50
Gray Forge	15.25 to	15.75
Southern Foundry, No. 2	17.35 to	17.85
Jackson County Silvery, 8 per cent. Silicon	20.05	

Coke.—The market is inactive and prices are a shade weaker, particularly on Coke for spot shipment, the softening tendency being attributed to the recent rains in the Coke regions and to the fact that the new car service regulation requiring a per diem charge for loaded Coke cars in yards soon goes into effect. Good shipping orders on contracts are being received. We quote Standard Connellsville Furnace Coke at \$2, at oven, for first half delivery, and \$1.80 to \$1.85 for spot shipment. Connellsville 72-hr. Foundry Coke is held at \$2.25 to \$2.50 for first half and \$2.20 to \$2.25 for spot shipment.

Finished Iron and Steel.—The effect of the holiday season is being felt. Practically no new business is being placed, and inquiries are almost entirely lacking. The majority of the salesmen representing the branch sales agencies of the mills have been called in, and will do little in the way of looking for new orders until after the first of the year. Taken as a whole, specifications have dropped off considerably, as was expected during the holidays and inventory time. While some of the mills report the receipt of few orders on contracts during the past week others have received about as many as usual, but for smaller lots. A large proportion of the consumers have small stocks on hand, and are buying from hand to mouth until they finish taking their inventories. Some orders are being received for delivery from three to four weeks ahead. The general situation is regarded as quite satisfactory, and considerable improvement is expected in the demand for most lines by the middle of January. Business has improved considerably with the Bolt manufacturers, and some good Bar specifications have come from them the past week, these being the first specifications from this source for some time. An encouraging sign is the fact that railroads that have been practically out of the market for forgings for car repair and new work for some time seem about ready to place orders. A local Forging plant has received a number of good inquiries of this character. The demand for Iron Bars continues light, and the two local mills have shut down until after the holidays. Present prices on Iron Bars are being firmly maintained, and mills are unwilling to close contracts for extended delivery at the present prices. The demand for Plates is light, and prices are being shaded \$1 to \$2 a ton on the narrow sizes. Similar concessions are being made by some of the mills on

sheets, the demand for which is less active than in the previous two or three weeks. Some structural specifications are being received in small lots. Local fabricators are fairly busy on old contracts. Among the new structural work that is expected to develop in this city the coming year is considerable railroad grade crossing elimination and track elevation work. Bids were received by the Board of Public Service of Columbus for a viaduct over railroad tracks, the lowest bid for the superstructure being made by the Champion Iron Works, Kenton, Ohio. We quote: Iron Bars, 1.50c., Cleveland, for car lots; Steel Bars, 1.60c., Cleveland, for car lots, half extras; Beams and Channels, 1.70c., base, Cleveland, and Plates, $\frac{1}{4}$ -in. and heavier, 1.70c.; Cleveland. We quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers quote Iron Bars out of stock at 1.55c. to 1.60c., and Steel Bars at 1.60c. to 1.70c. Beams and Channels from warehouse are 2c., and Plates, $\frac{1}{4}$ -in. and heavier, 1.90c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.80c. Warehouse prices on Boiler Tubes, $2\frac{1}{4}$ to 5 in., are 65 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 71 per cent. discount.

Old Material.—The market is almost lifeless and prices on all grades are weaker. Wherever possible, dealers are holding their Scrap until after the first of the year, when they expect a better market, with prices, perhaps, higher than have prevailed the past few weeks. Sales the past week of Scrap on cars and other material that dealers have been unable to hold have been made at price concessions of 25c. to 50c. per ton. Mills, however, are fairly well supplied and are not buying much at the lower prices. Dealers' prices to the trade, which are being shaded by those anxious to make sales, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	.....	\$16.50 to \$17.00
Old Iron Rails	.....	19.50 to 20.00
Steel Car Axles	.....	20.50 to 21.00
Old Car Wheels	.....	16.00 to 16.50
Heavy Melting Steel	.....	15.25 to 15.75
Relaying Rails, 50 lb. and over	.....	22.00 to 23.00
Railroad Malleable	.....	14.50 to 15.00
Agricultural Malleable	.....	13.50 to 14.00
Light Bundled Sheet Scrap	.....	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron Car Axles	.....	\$20.00 to \$20.50
Cast Borings	.....	8.50 to 9.00
Iron and Steel Turnings and Drillings	.....	9.50 to 10.00
Steel Axle Turnings	.....	11.00 to 11.50
No. 1 Busheling	.....	13.00 to 13.50
No. 1 Railroad Wrought	.....	15.50 to 16.00
No. 1 Cast	.....	14.00 to 14.50
Stove Plate	.....	12.00 to 12.50
Bundled Tin Scrap	.....	9.00

Metal Market.

NEW YORK, December 30, 1908.

Pig Tin.—The trade has been very quiet, although some business has been done for delivery after January 1. It is conceded that the statistics at the end of this month will be unfavorable to holders of the metal. Some well informed in the trade advance the opinion that there may be a sharp break in prices after the new year opens. Price changes during the week have been within narrow limits, as follows:

	Cents.
December 23	29.15 to 29.20
December 24	29.20
December 28	29.10
December 29	29.00
December 30	28.85

The London market is about £1 lower than last week, closing at £131 10s. for spot and £133 for futures. The arrivals so far this month are unusually large, amounting to 3469 tons. The afloats likewise are large, being 2529 tons.

Copper.—The market is much firmer. Electrolytic for January and February is not available at less than 14.25c., and 14.37 $\frac{1}{2}$ c. is demanded for future shipments. Lake likewise has advanced sharply, and is quoted at 14.75c. Rumors are heard of some buying under the surface by American consumers. This is probably true, for it is known that a number of inquiries have been in the market for large tonnages. There is not any general buying movement, however. Of course, all the business transacted is for next year's billing and shipment. Nevertheless, the market is in decidedly better shape than it was a fortnight ago. On Tuesday European meltters again bought freely, and have already taken considerable Copper. There does not appear to be the same difference in price between Copper for American consumption and European consumption there was a few months ago, and this is probably accounted for by the fact that consumers here are buying more largely. The exports of Copper so far this month are 21,000 tons. The total exports for the year will amount to about 295,000 tons, while the imports of Copper for the year the last two months being estimated are about 95,000 tons. The London market has advanced approximately 15s. during the week, closing at £63 16s. 3d. for spot and £64 12s. 6d. for futures.

Pig Lead.—Buying of Lead has been larger this week,

and Soft Missouri brands have sold at lower prices. This Lead can now be had at 4.15c., New York, but Desilverized Lead is firm, at 4.20c., which is the price of the leading interest. The St. Louis market is lower, at 4c. to 4.05c.

Selter.—Prices apparently are well sustained, Prime Western brands being quotable at 5.15c., New York, and 5c. to 5.02½c., St. Louis. The demand, however, is disappointing.

Antimony.—This market is as dull and uninteresting as at any time this year. Prices are without change, at 8.12½c. to 8.25c., for Halleit's, and 8.37½c. to 8.50c., for Cookson's, and 8c. for outside brands.

Tin Plate.—Business at the mills is fair. Prices continue firm, at \$3.70, Pittsburgh, and \$3.89, New York, for 100 lb. IC Coke Plates. Lower prices prevail abroad and in Swansea Welsh Plates are 1½d. lower, at 12s.

Old Metals.—The market is higher, and firm. A fair run of small orders has been received by dealers for shipment of Scrap after January 1. The only change in prices has been an advance in the quotation of brass and heavy machine composition. Otherwise dealers' selling prices are unchanged, as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	13.50 to 13.75
Copper, Heavy and Wire.....	13.25 to 13.50
Copper, Light and Bottoms.....	12.00 to 12.25
Brass, Heavy.....	9.50 to 9.75
Brass, Light.....	7.50 to 8.00
Heavy Machine Composition.....	12.75 to 13.00
Clean Brass Turnings.....	8.50 to 9.00
Composition Turnings.....	10.50 to 11.00
Lead, Heavy.....	4.15
Lead, Tea.....	3.90
Zinc Scrap.....	3.75

New York.

NEW YORK, December 30, 1908.

Pig Iron.—Business has been rather quiet, but the market has been firm. The inquiry for larger lots, at the present time, is coming chiefly from Pipe makers. Some of the Steel mills are also in the market for round lots. We quote \$17.25 to \$17.75 for No. 1 Northern Foundry, \$17 to \$17.50 for No. 2 Foundry and \$16.50 to \$16.75 for No. 2 Plain. Alabama Irons are quoted \$17.50 to \$17.75 for No. 1 Foundry, and \$17.25 to \$17.50 for No. 2 Foundry.

Steel Rails.—The consideration of Rail requirements for 1909 by the B. & O., New York Central, New Haven, Boston & Maine, and the Harriman lines is reported, but no formal inquiries for definite amounts have been received. Light Rail business has been of fair proportions recently, and the year's record in this product is far better relatively, than in heavy Rails. Frog and crossing work has also shown up well in 1908, and the total is probably not far behind that for 1907.

Structural Material.—The Steel fabricating companies report quietness at the end of the year, and an outlook for a continuance of that condition in the early weeks of 1909. The railroad situation has no large possibilities for the immediate future, and the one large bridge contract figured on some weeks ago—8500 tons for the Northern Pacific—is still withheld. The Bridgeport, Conn., bridge, at Congress street, which involves a large amount of concrete construction with a Scherzer lift in one span, went to Snare & Triest. The Steel amounts to 850 tons. Among other contracts placed, amounting for the week to about 9000 tons, were the following: Otis Elevator Company foundry, at Yonkers, N. Y., 500 tons; Lake Shore elevated work, at Chicago, 400 tons, to the Toledo & Massillon Bridge Company; two apartment houses in New York for the Carlyle Realty Company, 1100 tons, to Alfred Norton; Steel warehouse in the Bronx, 800 tons, to Levering & Garrigues; terminal work at Hoboken, N. J., for the Public Service Corporation, 800 tons, to Fagan Iron Works; terminal warehouse in Baltimore, 1300 tons; addition to the Hartford Building, near Union square, New York, 600 tons; the Interborough Company's approach at Division and Allen streets to the Williamsburg Bridge, 1900 tons; Shiel's Estate Building, at San Francisco, 550 tons, to Llewellyn Iron Works, Los Angeles, Cal.; electric power house, at Vernon, Vt., 400 tons; Paul A. Sorg Paper Company Building, at Middletown, Ohio, 800 tons, to Riverside Bridge Company. Bids have just gone in on two buildings for the Prudential Life Insurance Company, at Newark, N. J., requiring about 7000 tons of Steel. The American Bridge Company will increase its operations at the first of the year to a 60 per cent. basis. It has booked about 32,000 tons this month, and other fabricators probably 60,000 tons. In the year the American Bridge Company has fabricated about 350,000 tons, or about 100,000 tons more than it booked, while outside companies have fabricated about 700,000 tons, or practically the equivalent of their bookings. We continue to quote plain material shipped from mill on the following basis, delivered at tidewater: Beams, Channels, Angles and Zees, 1.76c.; Tees, 1.81c. On Beams, 18 to 24 in., and Angles, over 6 in., the extra is 0.10c. Structural Material, cut to lengths, is sold in small lots at 2½c.

Bars.—The demand for Iron Bars has distinctly improved. Sales are more numerous, and inquiries are coming

forward for good quantities to cover requirements of manufacturing consumers. Prices are firm, with quotations ranging from 1.56c. to 1.60c., tidewater. Steel Bars are unchanged at 1.56c., tidewater.

Plates.—Only the ordinary run of small orders for immediate requirements is coming to local sales offices. Prices are firmly held on Standard Sized Plates, as follows, at tidewater: Sheared Plates, 1.76c. to 1.86c.; Flange Plates, 1.86c. to 1.96c.; Marine Plates, 2.16c. to 2.26c.; Firebox Plates, 2.65c. to 3.50c., according to specifications.

Cast Iron Pipe.—Public lettings are few in this locality, nothing of any importance being immediately in sight. Inquiries for spring delivery are excellent, and quite a number of contracts have been made for both Gas and Water Pipe, at prices higher than have recently been ruling. Carload lots of 6-in. are quoted at \$24.50, per net ton, tidewater, for prompt delivery.

Old Material.—Some large transactions are reported in Heavy Melting Steel Scrap. One buyer has taken from 25,000 to 30,000 tons, and another has about closed for 10,000 tons. While inquiries are fairly numerous for other classes of Old Material, actual orders have been light. Prices are well held, and in some lines are higher. Quotations are as follows, New York and vicinity, per gross ton:

Old Girder and T Rails for melting.....	\$1.00 to \$15.50
Heavy Melting Steel Scrap.....	15.00 to 15.50
Old Steel Rails, rerolling lengths.....	15.50 to 16.00
Relying Rails.....	22.50 to 23.00
Old Iron Rails.....	20.00 to 20.50
Standard Hammered Iron Car Axles.....	22.00 to 22.50
Old Steel Car Axles.....	19.50 to 20.00
No. 1 Railroad Wrought.....	18.00 to 18.50
Iron Track Scrap.....	15.50 to 16.00
No. 1 Yard Wrought, long.....	16.50 to 17.00
No. 1 Yard Wrought, short.....	15.50 to 16.00
Light Iron.....	9.00 to 9.50
Cast Borings.....	10.50 to 11.00
Wrought Turnings.....	11.50 to 12.00
Wrought Pipe.....	13.00 to 13.50
Old Car Wheels.....	15.00 to 15.50
No. 1 Heavy Cast, broken up.....	14.50 to 15.00
Stoneware.....	12.50 to 13.00
Locomotive Grate Bars.....	12.50 to 13.00
Malleable Cast.....	13.50 to 14.00

Nash, Isham & Co., 82 Beaver street, New York, have been appointed sole Eastern selling agents for the Ashland Iron & Mining Company, Ashland, Ky., manufacturer of Ashland High Silicon Pig Iron and Bessemer Ferrosilicon.

The Iron and Steel Works of Canada.

The American Iron and Steel Association has issued a supplement to its Directory for 1908, giving a complete list of the blast furnaces, rolling mills and steel works in Canada, corrected to December 1, 1908. The association's last previous list of Canadian works was published in December, 1904. The summary of the industry shows at the present time 15 completed blast furnaces (12 coke and 3 charcoal), 1 rebuilding (charcoal) and 2 projected (coke). In addition 1 abandoned coke furnace is still standing. There are also 2 plants making pig iron, ferrosilicon, &c., by electricity. The annual capacity of the finished and rebuilding plants is 1,005,000 gross tons of coke pig iron, 34,800 tons of charcoal pig iron and 2500 tons for the electric plants. The number of furnaces four years ago was 16 completed and 3 projected, the former having a capacity of 755,000 tons of coke pig iron and 75,000 tons of charcoal pig iron, a total of 830,000 tons.

The list of rolling mills and steel works shows 26 completed and 1 to be rebuilt. Of these 1 has a standard Bessemer steel plant with 2 converters, 1 has a plant with an idle modified Bessemer converter, 1 has a Troponas plant with 1 converter, and 1 has 2 standard Bessemer converters used for desilicizing and decarburizing metal for open hearth furnaces; 7 plants have 24 basic open hearth steel furnaces, 1 has 2 acid open hearth steel furnaces, 1 is to rebuild a basic open hearth furnace, and 1 open hearth plant may add 1 basic furnace; 1 plant has 6 furnaces for making steel by the Hunter process, and 1 plant with 2 furnaces makes steel by electricity. The capacity double turn is 200,800 gross tons of Bessemer ingots, 690,300 tons of basic open hearth ingots and castings, 12,000 tons of acid open hearth castings, 1500 tons of Hunter steel castings and 1200 tons of electric steel ingots and castings. The annual capacity of the 18 completed and 3 building plants in 1904 was 200,800 gross tons of Bessemer ingots, 451,000 tons of open hearth ingots and castings and 1500 tons of Hunter steel castings. The annual capacity, double turn, in finished rolled and forged products, not including muck

bars, billets, blooms, sheet bars, &c., is now 1,004,600 tons, against 839,600 tons in 1904.

From the Directory Supplement the following list is taken of the blast furnace, steel works and rolling mill companies of Canada, with annual capacity of each:

Nova Scotia.

Dominion Iron & Steel Company, Ltd., Sydney.—Four blast furnaces, capacity 400,000 gross tons; 300-ton metal mixer; 500 Otto-Hoffman coke ovens, capacity 450,000 net tons; coal washing plant, tar and chemical works, and cement plant. Ten 50-ton open hearth furnaces, two 15-ton Bessemer converters, and rolling mills. Capacity, 400,000 tons of ingots. Product, steel rails and wire rods.

Londonderry Iron & Mining Company, Ltd., Montreal, Quebec.—Works at Londonderry. One blast-furnace, capacity 35,000 tons; coal washing plant; 97 coke ovens, capacity 40,000 net tons. Product, foundry pig iron.

Nova Scotia Steel & Coal Company, Ltd., New Glasgow.—One blast furnace at Sydney mines, capacity 70,000 tons. Forge and open hearth steel plant at New Glasgow, capacity 60,000 tons of finished roll and forged products and 7500 tons of railroad spikes. Open hearth steel works at Sydney Mines. Three Wellman 40-ton basic furnaces and one 75-ton tilting melting mixer. Capacity, 70,000 tons. Coal mines near New Glasgow and at Sydney Mines and iron mines on Belle Island.

Rhodes, Curry & Co., Ltd., Amherst.—Forge fire, scrap and heating furnaces and 9 and 16 in. mills. Capacity, 12,000 tons of rolled material, 12,000 tons of axles and other forgings and 600 tons of nuts. Gray iron and car wheel foundry.

Star Mfg. Company, Ltd., Dartmouth.—Two trains of rolls, capacity 10,800 tons of merchant iron.

New Brunswick.

Portland Rolling Mills, Ltd., Strait Shore, St. John.—Three bar mills and nail plate mill. Capacity, 10,000 tons of finished rolled products, besides cut nails, spikes, horseshoes, nuts and bolts.

Quebec.

Canada Iron Furnace Company, Ltd., Montreal.—One charcoal blast furnace, capacity 10,000 tons.

John McDougall & Co., Montreal.—Two charcoal blast furnaces at Drummondville, capacity 4800 tons. Charcoal kilns with capacity of 1,621,800 bushels.

Best Steel Casting Company, Ltd., Verdun.—One 10-ton basic open hearth furnace, capacity 9000 tons of low carbon steel castings.

Grand Trunk Railway Rolling Mill, Point St. Charles, Montreal.—One 12-in. train, capacity 7000 tons of bars, angles and tees.

Montreal Rolling Mills Company, Montreal.—Ste. Cunegonde Works, on Lachine Canal, Hochelaga County: Four trains of rolls, capacity 35,000 tons of finished iron and steel, 100,000 kegs of horseshoes, 30,000 boxes of horse nails, 25,000 tons of wire, 250,000 kegs of wire nails, and 30,000 kegs of cut nails. St. Patrick Street Department, Montreal: Two trains of rolls, capacity 25,000 tons of bar iron and steel, 125,000 kegs of spikes, and 5000 tons of bolts and nuts. St. Henri Department, Montreal: One butt welding furnace, capacity 25,000 tons of wrought iron and steel pipe.

Montreal Steel Works, Ltd., Point St. Charles, Montreal.—One 3000-lb. modified Bessemer converter (idle) and 2 15-ton acid open hearth steel furnaces. Capacity, 12,000 tons of open hearth and manganese steel castings.

National Tool & Axe Works, Three Rivers.—One furnace for a secret steel process, destroyed by fire February, 1908. To be rebuilt in 1909 with one 20-ton basic open hearth furnace. Capacity, 5000 tons of steel castings and 3000 tons of malleable and brass castings.

Peck Rolling Mills, Ltd., Montreal.—Rolling mill on Lachine Canal. Product, bar iron and steel, light rails, spikes, cut nails, wire nails, horseshoes, &c.

Ontario.

Algoma Steel Company, Ltd., Sault Ste. Marie.—Two blast furnaces, capacity 230,000 tons of Bessemer and basic pig iron; 150-ton mixer. 20 resorts for charcoal

manufacture, two blast furnaces projected, two 6-ton Bessemer converters, two 35-ton open hearth steel furnaces, blooming mill, rail and structural mill. Capacity, 200,000 tons of Bessemer ingots, 56,000 tons of open hearth ingots and 230,000 tons of rails and other finished products.

Atikokan Iron Company, Ltd., Port Arthur.—One blast furnace, capacity 50,000 tons.

Standard Chemical Company of Toronto, Ltd.—One blast furnace at Deseronto, capacity 20,000 tons of charcoal pig iron; damaged by fire in September, 1908; now being rebuilt.

Hamilton Steel & Iron Company, Ltd., Hamilton.—Two blast furnaces, capacity 175,000 tons; two rolling mill plants at Hamilton, capacity 44,000 tons of bar and band iron and steel, fish plates and forgings; a third mill at East Hamilton, capacity 25,000 tons of bars, 105,000 kegs of spikes and 8000 boxes of washers; four basic open hearth furnaces, two 30-ton and two 15-ton; capacity, 71,000 tons of ingots and 1300 tons of castings.

Canada Iron Furnace Company, Ltd., Montreal.—Blast furnace at Midland, capacity 45,000 tons of foundry and malleable Bessemer and Bessemer pig iron.

Electro Metals, Ltd., Welland.—Electric plant for the manufacture of pig iron, ferrosilicon and other ferroalloys.

Lake Superior Power Company, Sault Ste. Marie.—Two experimental electric furnaces for the manufacture of pig iron and ferroalloys, capacity 1000 tons of ferro-nickel pig iron or 250 tons of ferrosilicon.

Belleville Iron & Horseshoe Company, Ltd., Belleville.—One 9-in., one 12-in. and one 18-in. mill, capacity 12,000 tons of rolled products, 50,000 kegs of spikes and 40,000 kegs of horseshoes; formerly operated by the Iron & Steel Company of Canada, Ltd.; later by the Toronto & Belleville Rolling Mills, Ltd., and acquired by the present company July 1, 1908.

Canada Tin Plate & Sheet Steel Company, Ltd., Morrisburg.—Eight black plate mills. Product, 12,500 tons of black and galvanized sheets and black plates for tinning. Four sets for tin plates, weekly capacity 2500 boxes.

William Kennedy & Sons, Ltd., Owen Sound.—One 2-ton Tropenas converter, capacity 400 tons of steel castings; gray iron foundry, capacity 300 tons.

London Rolling Mill Company, Ltd., London.—One 18-in., one 14-in. and one 10-in. mill, capacity 15,000 tons of merchant bars and 6000 tons of bolts, nuts, hinges, &c.

Northern Iron & Steel Company, Ltd., Toronto.—At Collingwood: Two 20-ton basic open hearth furnaces, capacity 36,000 tons of ingots; two heating furnaces and two trains of rolls, capacity 30,000 tons of billets, bars, angles, light rails, &c. Excavation made in 1902 for a blast furnace, but project abandoned. Steel plant idle and for sale.

Ontario Iron & Steel Company, Ltd., Toronto.—At Welland: Two open hearth steel furnaces and two three-high trains, capacity 10,000 tons of steel castings and 28,000 tons of billets, bars, angles, fish plates, &c.; one 50-ton basic open hearth furnace projected.

Ottawa Steel Casting Company, Ltd., Ottawa.—Six Hunter furnaces and three cupolas, capacity 1500 tons of steel and 1500 tons of iron castings.

Toronto Bolt & Forging Company, Ltd., at Sunnyside, Toronto.—Three heating and two busheling furnaces and three trains of rolls, capacity 8000 tons of merchant bars, implement and carriage iron; also works at Swansea and Gananoque for the manufacture of bolts, nuts, spikes, rivets and drop forgings.

American Electric Furnace Company, 45 Wall street, New York.—At Niagara Falls: Two electric furnaces with daily capacity of 3 tons and 2000 lb., respectively. Product, steel ingots and steel castings and various alloys.

Manitoba.

Manitoba Rolling Mill Company, Ltd., Winnipeg.—Two heating furnaces, one forge fire and two trains of rolls; capacity, 12,000 tons of merchant bar iron. May add two busheling furnaces and a squeezer in 1909. Branch office with the United States Horseshoe Company, Erie, Pa.

New Railroad and Equipment Building in 1908.

That the figures for new railroad mileage for 1908 would show a sharp falling off was expected. The statistics presented by the *Railroad Age-Gazette* are really surprising in that the falling off from 1907 was not greater. In 1907, according to returns from all the railroad companies in the United States, approximately 5212 miles of new main track was laid, while a similar record for 1908 shows 3214 miles, a decrease of 1998 miles, or 38.3 per cent. The 1908 record is the smallest since 1904, when 3832 miles of main track was laid. The mileage built in 1904 showed a falling off of 1820 miles, or 32.2 per cent., from 1903. It is interesting to note that for each fifth year since 1893 the mileage record has been a little over 3000 miles. In 1894 1760 miles of new main track was laid, a decrease of 1264 miles, or 41.7 per cent. from the mileage built in 1893. This parallels closely the percentage of decrease this year. Not until 1898, when 3265 miles was laid, did the record again reach that of 1893, showing a drag of five years following that panic.

The mileage laid east of the Mississippi in 1908 was 761 as compared with 1884 miles in 1907, a decrease of 59.6 per cent. West of the Mississippi the 1908 and 1907 records were 2455 miles and 3420 miles, respectively, a decrease of 28.2 per cent. The longest stretch added by one company this year was 790 miles for the Pacific coast extension of the Chicago, Milwaukee & St. Paul. The Southern Pacific added 448 miles and the Great Northern 274 miles, the latter construction being in Minnesota, Montana and Canada. The above three companies added 1088 miles or 55.6 per cent. of the mileage built west of the Mississippi. The Virginian Railway leads in new construction east of the Mississippi, with 131 miles for Virginia and West Virginia. Next is the Carolina, Clinchfield & Ohio, with nearly 85 miles built in North Carolina, Tennessee and Virginia.

Canada showed an increase of 21.7 per cent. in new construction in 1908, or 1248 miles, against 976 miles in 1907. The following table shows the mileage built in the United States in the last 16 years:

1893	3,024	1899	4,569	1904	3,832
1894	1,760	1900	4,894	1905	4,388
1895	1,428	1901	5,368	1906	5,623
1896	1,692	1902	6,026	1907	5,212
1897	2,109	1903	5,652	1908	3,214
1898	3,265				

Car and Locomotive Building.

Very few car and locomotive orders were carried over from 1907, though car and locomotive builders worked at full capacity throughout that year on orders placed in its early months. Reports from 35 car building companies in the United States and Canada show a total of 78,271 cars built in 1908, or only 27 per cent. of the number for 1907. The figures include subway and elevated cars, but not street railroad and interurban cars. Of the cars built in the United States 66,751 were freight cars for domestic service, 1206 freight cars for export, 1566 passenger cars for domestic service and 71 passenger cars for export. Canada built 8593 freight cars and 79 passenger cars for domestic service and 5 freight cars for export. In 1907 Canada built 9159 freight cars and 106 passenger cars. The record of cars built in the past 10 years is as follows:

Year.	Freight.	Passenger.	Total.
1899	419,886	1,305	121,191
1900	115,631	1,636	117,267
1901	136,950	2,055	139,005
1902	162,599	1,948	164,547
1903	153,195	2,007	155,202
1904	60,806	2,144	62,950
1905	165,455	2,551	*168,006
1906	240,503	3,167	*243,676
1907	284,188	5,457	*289,645
1908	76,555	1,716	*78,271

* Includes Canadian output.

Returns from 11 locomotive builders in the United States and Canada show a total of 2342 engines, about the same relative falling off as in the cars built. Of the 2124 built in the United States, 1668 were for domestic use and 456 for export. These figures include 245 elec-

tric and 79 compound locomotives. The Canadian engines, 218, were all for domestic service. Of these 20 were compound. Comparisons for the last 16 years are given in the following table:

Year.	No. built.	Year.	No. built.	Year.	No. built.	Year.	No. built.
1893	2,011	1897	1,251	1901	3,384	1905	*5,491
1894	605	1898	1,875	1902	4,070	1906	*6,952
1895	1,101	1899	2,475	1903	5,152	1907	*7,362
1896	1,175	1900	3,153	1904	3,441	1908	*2,342

* Includes Canadian output.

Motive Power and Rolling Stock Ordered in 1908.

The statistics of the *Railroad Age-Gazette* show that the orders for motive power and rolling stock placed by the railroads of the United States and Canada in 1908 were smaller than in any year since 1901, when the compilation of these statistics was begun. The smallest previous year was 1903 and in 1908 the total was only about 50 per cent. of that for 1903. The total orders for locomotives in 1908 were 1182; for passenger cars, 1319, and for freight cars, 62,669. The car shops have not run 50 per cent. of their capacity this year. Few have sufficient business booked to carry them up to March, 1909, even with largely reduced shop forces. The rate at which new rolling stock orders have come in in the past two or three weeks is more encouraging, and it is believed a considerable amount of equipment will be placed early in the new year. Of the freight cars ordered in 1908 15,561 are for all steel and 19,651 for steel under frames. Of the passenger cars 320 are all steel and 56 for steel under frames. Of the locomotives 32 are compound. The totals of cars and locomotives ordered in the past seven years, as distinguished from cars and locomotives built, are shown in the following table:

1902.	1903.	1904.	1905.	1906.	1907.	1908.
Locomo'tvs	4,665	3,283	2,538	6,265	5,642	3,482 1,182
Pass. cars.	3,439	2,310	2,213	3,289	3,402	1,791 1,319
Fght. cars.	195,248	108,936	136,561	341,315	310,315	151,711 62,669

Developments in Car Construction.

The tendencies apparent in railroad equipment design and construction are interestingly reviewed by the *Railroad Age-Gazette*. A synopsis of its comments follows:

All steel cars for passenger equipment are now being confidently ordered in large numbers. The order of the Harriman lines for 200 steel passenger cars will furnish initial equipment of this kind for the Union Pacific and the Central Pacific, as well as the Illinois Central. The Pennsylvania has had on many of its trains in regular main line service the steel coaches built last year, and it has placed orders for large additions to this class of equipment. It has also arranged to provide for solid steel trains, including Pullman sleepers, to be used in connection with its new passenger terminal in New York City. The Union Pacific experience with steel cars having semielliptical roofs has been so satisfactory that all the new steel equipment recently ordered will be built in that way. This road has become prominent as the builder of steel gasoline motor cars on a large scale. While steel coaches are being ordered by only a few roads, the use of steel underframes for baggage and mail cars has become more general.

While a few large capacity steel freight cars have been built for special uses in and around steel works, the maximum capacity remains 50 tons. The 50-ton steel cars built for Western lines are usually of the gondola type, with drop bottom doors, as this form is available for lumber and other kinds of freight, in addition to the usual lading of coal or ore.

Solid rolled steel wheels for freight cars have become well established in the best practice, and they are now used in such large numbers that three important works are making them—the Carnegie Steel Company, the Standard Steel Company at Burnham, and the Standard Steel Car Company, at Butler, Pa.

Roller side bearings and center plates have at last demonstrated their advantages for large capacity cars, and they are now used in increasing numbers. The development of these details is one of the most important matters connected with the satisfactory operation of this class of cars.

Developments in Locomotive Construction.

The Pacific type of locomotive has become the established standard for heavy passenger service, and most of

the larger orders have been for this kind. These engines as built for the trunk lines have cylinders 23 x 28 in., with heating surface 4000 sq. ft. and tractive effort of 35,000 lb. While the average weight per driving axle has been as high as 57,800 lb., there is little tendency to exceed 55,000 lb. in general practice. Probably the best solution of difficulties due to excessive wheel weights in the growth of the American locomotive to enormous proportions is the division into two units, as in the Mallet type, and the experience with these engines in the past year has been particularly instructive and satisfactory. Eight railroads have already ordered Mallet locomotives.

As pointed out in the paper by C. J. Mellin, read at the New York meeting of the American Society of Mechanical Engineers and summarized in *The Iron Age* of December 10, page 1706, the American Locomotive Company and the Baldwin Locomotive Works differ in that the former provides no small truck wheels, regarding the front engine as an efficient leading truck for the rear engine. The B. & O. articulated locomotives have for each engine six drivers and no truck. The Erie engines, the heaviest of this type yet built, have four pairs of drivers and no trucks. The Baldwin engines built for the Great Northern and the Northern Pacific have for each unit six drivers and a pony truck. The Baldwin passenger locomotive of the articulated type has for each unit four drivers and a pony truck. The two leading locomotive builders also differ regarding the construction of superheaters. The Baldwin Works have adopted the policy of using smoke box superheaters and low superheat. The American Locomotive Company prefers to use in its practice field tubes and a high degree of superheat. Further progress on the latter line is expected. In improved valve gear for locomotives there have been interesting developments. The Young rotary valve and gear has been modified so as to use the Walschaerts form. The Pilliod valve gear is being applied to the new Alton passenger engines.

In boiler construction the combustion chamber is growing in favor. It will be used in new engines for the St. Paul. There is some hesitation about the further use of fireboxes as wide as 65 to 75 in. for bituminous coal, and there is a tendency to use more moderate widths, 50 to 56 in. The short life of side sheets in wide fireboxes has suggested the importance of inclining firebox sheets out toward the top instead of in, as they do on many wide boxes. This will probably lead to a narrower grate and decided changes in the prevailing shape of large fireboxes.

The electrification of the St. Clair tunnel on the Grand Trunk has demonstrated the success of the single phase electric locomotive in the heaviest freight service thus far operated by electricity, and its adaptability to high speed passenger service is shown by its performance on the New Haven. The three-phase system for electric locomotives is soon to be used by the Great Northern in its Cascade tunnel. The decision of the Pennsylvania to use direct current for the locomotives operating in its terminal lines connected with the New York station is an important event in the history of the application of electricity to steam lines in the United States.

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The Pressed Steel Car Company.—Early in January the steel car works of the Pressed Steel Car Company at McKees Rocks, Pittsburgh, will be put in full operation after being practically shut down in all departments for some months. For several weeks the plant has been working part time on steel passenger coaches for the Hudson Terminal Companies and the Chicago Railways Company. Important repairs and improvements have been made, the buildings having all been remodeled and furnished with new roofs and are now in splendid condition. A Weiss condenser has been installed and work is being completed on the installation of a 1000-kw. steam turbine for generating electricity by means of exhaust steam by the Westinghouse Electric & Mfg. Company. The company is also putting in one 500-kw. live steam turbine. When the plant is started, work will be begun on orders recently booked for nearly 10,000 steel cars. These include 2000 for the Grand Trunk Railroad, 2350 for the Carolina, Clinchfield & Ohio Railroad, and 1500 for the Virginian Railroad.

Iron and Industrial Stocks.

NEW YORK, December 30, 1908.

The double holiday of Friday and Saturday considerably curtailed the transactions in securities the past week, but the market has been exceedingly strong with prices not only maintained, but in some instances considerably advanced. The range of prices on iron and industrial stocks from Tuesday of last week to Monday of this week was as follows:

Allis-Chalm., com..	15½ - 16	Pressed Steel, pref. 100 - 101½
Allis-Chalm., pref.	49½ - 50	Rail. Spring, com., 48½ - 49½
Beth. Steel, com..	24 - 25½	Rail. Spring, pref. 102½
Beth. Steel, pref.	54½ - 55½	Republic, com.... 25½ - 26
Can., com.....	9 - 9½	Republic, pref.... 86½ - 87
Can., pref.....	73½ - 73½	Sloss, com..... 78 - 78½
Car & Fdry, com..	47½ - 50½	Pipe, com..... 28½ - 29½
Car & Fdry, pref.....	109	Pipe, pref..... 75 - 77½
Steel Foundries....	38½ - 39½	Steel, com..... 53½ - 54½
Colorado Fuel....	39½ - 41½	Steel, pref..... 112 - 113
Gen. Electric....	158 - 160½	West. Electric..... 85½ - 86½
Gr. N. ore cert....	72½ - 73½	Chi. Pneu. Tool.... 20 - 24½
Int. Harvester, com....	63½	Cambria Steel.... 39 - 39½
Int. Harv., pref....	109½ - 109½	L. S. Corp..... 16½ - 17
Locomotive, com....	56½ - 58½	Penna. Steel, pref.... 104½
Locomotive, pref....	111 - 111½	Crucible St., com.... 8 - 8½
Nat. En. & St. com....	13½ - 15½	Crucible St., pref.... 57 - 57½
Pressed Steel, com.	42½ - 44½	

Last transactions up to 1:30 p.m. to-day are reported at the following prices: United States Steel common 54½, preferred 113, bonds 102½; Car & Foundry common 49½, preferred 109; Locomotive common 57½, preferred 111½; Colorado Fuel 39½; Pressed Steel common 43½, preferred 102; Railway Spring common 47½; Republic common 25½, preferred 86½; Sloss-Sheffield common 77½; Cast Iron Pipe common 28½, preferred 76; Can common 8½, preferred 73½.

Dividends.—The Montreal Steel Works has declared a semiannual dividend of 2 per cent. on the common stock, payable January 2, and a quarterly dividend of 1½ per cent. on the preferred stock, payable January 8.

The Vulcan Detinning Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable January 20.

The Board of Directors of the Riehle Brothers' Testing Machine Company, Philadelphia, Pa., has declared an annual dividend of 6 per cent. on the capital stock, for the year 1908.

The Standard Underground Cable Company, Pittsburgh, has declared a quarterly dividend of 3 per cent., an annual extra dividend of 3 per cent., both out of the earnings for the year ended December 31, 1908, and also a special dividend of 7 per cent. out of the accumulated earnings of the company in past years.

The Westinghouse Shops Busy.

The business of the Westinghouse Machine Company, Pittsburgh, is showing some improvement of late and several good sized orders have been received within the last few days. Among these orders was one for a large steam engine from the Pennsylvania-Arizona Mining Company, Poland, Ariz., which will be used to operate the machinery of a copper mine. The city of Frankfort, Ind., has ordered a 750-hp. steam turbine. The American Iron & Steel Mfg. Company, which is erecting a new plant at Lebanon, Pa., has ordered a 1500-hp. steam turbine outfit. The American Plate Glass Company has ordered a 1000-hp. gas engine, an electric generator, and a switchboard for a complete power plant for its new plate glass factory at James City, Pa. The Standard Underground Cable Company, Pittsburgh, by way of adding to its producing facilities at its plant in Perth Amboy, N. J., has contracted for a 1000-hp. horizontal double acting gas engine. The Rockland Light & Power Company, Nyack, N. Y., has ordered a 1000-hp. turbine equipment; the Youngstown Sheet & Tube Company a 3000-hp. turbine set, and the Warren Street Railroad Company, Warren, Pa., a 500-hp. gas engine.

The management at the East Pittsburgh Works of the Westinghouse Electric & Mfg. Company reports that the situation is improving and that the volume of orders is growing steadily. An interesting feature of the new orders is the large demand for motors and power house machinery, from mills, mines and other large industrial establishments throughout the country.

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Danner & Co., Wien, Austria, manufacturers of electrically melted Styrian tool steel, made from Styrian Erzberg ore and pig iron, have appointed Frantz Djourup, 349½ Washington boulevard, Chicago, agent for the exclusive sale of their product in the United States.

The Machinery Trade.

NEW YORK, December 30, 1908.

Machine houses report no sales or inquiries of individual importance the past week, though business compared favorably with that of the previous week, and the slight improvement was maintained. Considerable encouragement is afforded by the business transacted, in view of the time of the year, and it undoubtedly augurs well for a substantial betterment early in the new year. This opinion is based to some extent on the orders promised shortly after the opening of the year of which there are quite a number, and new shop construction planned which will be carried through without delay, two projects alone calling for the expenditure of \$450,000. In preparation for the expected increase in demand for new machines, dealers are making special efforts to dispose of their second-hand tools, to make room in their storehouse for the new stock. Since our last report quite a number of second-hand tools have been sold, this class of business constituting a good share of the sales of some houses. Practically all of the dealers and manufacturers report business for December well up to that for November, and there are few whose trade increased to any extent. In the West the railroads are considerably more active than in the East, from whom no machinery requirements of importance have been reported in some time. The Chicago & Northwestern Railroad has issued a fair sized list of machine tools, and one of substantial proportions is expected soon from the St. Louis & San Francisco Railroad.

Two Important Machinery Requirements.

Large shops are to be erected by the Caroline, Clinchfield & Ohio Railroad, Johnson City, Tenn., for the construction and equipment of which \$200,000 has been authorized, all of which will be spent within the next three months. As these are to be the principal shops of the road, and are to be equipped with modern machinery capable of handling the largest motive power, an extensive equipment of heavy machinery will likely be required. The company is making a number of improvements and the extension of 210 miles from the coal fields of southwestern Virginia to the tracks of the Seaboard Air Line, at Bostic, N. C., will be completed and in operation about February 1. An extension of 35 miles from Bostic to Spartanburg is under construction, and will be completed about October. Other extensions are in contemplation, but have not yet been determined upon.

About \$250,000 is to be spent by the York Mfg. Company, York, Pa., in enlarging its plant, \$100,000 of which will be used in the purchase of modern equipment for the new additions. A tract of land has been purchased for the new buildings, and contract is about to be let for the construction of a new machine shop, 100 x 230 ft., having a 40-ft. center bay, with 30-ft. galleries on either side. The buildings will be of steel, concrete and brick construction. Other additions to the plant will be built as soon as the new machine shop is completed. The company already has a large plant devoted to the manufacture of refrigerating machinery.

The Delaware, Lackawanna & Western Railroad has inquiries out for a 36-in. vertical turret lathe, a No. 2 turret lathe, a 400-ton hydraulic press, and a 16-in. shaper.

The Pennsylvania Railroad contemplates the erection of a new boiler shop at Renovo, Pa., and has made estimates as to what would be the cost, but has not yet definitely decided to erect the shop. It is understood that the new building will be about 80 x 280 ft., of brick and steel construction.

The Cutler-Hammer Company, 50 Church street, New York, with uptown offices at 79 East 130th street, has purchased a block of property on 144th street, from the Southern Boulevard to Timpson place, where, it is understood, the company will eventually build a manufacturing plant. A. B. Hubbell, who has his headquarters at the uptown office, is in charge of the details.

Of the inquiries in the market one is from the Standard Roller Bearing Company, Philadelphia, Pa., for a few tools.

Improvements to the various plants are being planned by the Lynchburg Foundry Company, Lynchburg, Va., which will necessitate the installation of considerable new mechanical equipment. It will be remembered that the company is to spend about \$50,000 in making improvements to its plant at Radford, Va., and that contract has been let for an addition to the special foundry to be 50 x 125 ft. This building is to be equipped with electric traveling crane, and pits for the vertical casting of flanged pipe ranging from 30 to 60 in. in diameter and 2 to 20 ft. in length. The company has purchased 23 acres of land at Norfolk, Va., with a deep water frontage of 732 ft., and belt line railroad connections, on which it will build a modern pipe foundry for export and coastwise trade. Details of the construction of the new plant have not been completed. H. E. McWane, president of the Lynchburg Foundry Company, with his brother, J. R. McWane, vice-president and general manager of the American

Cast Iron Pipe Company, Birmingham, Ala., will sail January 6 for a trip to England, Belgium, and Germany, to visit pipe foundries in those countries.

The T. H. Symington Company, Baltimore, Md., with plant located at Corning, N. Y., has secured an option on 20 acres of land in the triangle formed by the tracks of the main line of the New York Central Railroad and a spur of the Buffalo, Rochester & Pittsburgh Railroad, at Rochester, N. Y., and has announced its decision to erect on the property a large plant for the manufacture of malleable iron journal boxes for freight and passenger cars, ball bearing center plates and miscellaneous malleable castings used by railroads. During the past six months the company has had under consideration sites in various cities, but finally decided on the one in the vicinity of the plant of the General Railway Signal Company. The new plant will consist of several buildings, the principal of which will be a large machine shop, foundry and power plant. Most of the equipment at the present plant in Corning will be moved to Rochester, but on account of the large increase in capacity of the new plant a quantity of new machinery will be required. A special feature regarding the new equipment will be three large milling machines, especially designed for the finishing of journal castings. Designs for these machines are being prepared by a firm of Rochester mechanical engineers. The company has been turning out 2000 castings a day at the Corning plant, and this capacity will be more than doubled, giving employment to 1200 men at the start. The company is capitalized at \$1,432,000, of which \$1,000,000 is common stock and \$432,000 preferred stock. To cover the construction of the new plant without drawing on the working capital the company will issue bonds to the amount of \$650,000, secured by a first mortgage on the new plant. The Rochester Trust & Safe Deposit Company is to act as trustee under the mortgage. Thomas H. Symington is president and A. H. Weston, mechanical engineer. It is expected to start construction about March 1.

The Delaware Railway Tunnel Company has secured the necessary legislation both in Philadelphia and in New Jersey to construct the tunnel under the Delaware River, connecting the former city with Camden. Beginning at Market and Second streets, Philadelphia, one tube will extend south to Chestnut street and thence across the river to Camden. The north tube will extend from Third street in Camden across the river to Second and Arch streets in Philadelphia, meeting the first tube at Market street. The combined mileage will be about 4 miles. Having secured the necessary legislation, it is expected that the company will now proceed with the work of construction.

New England Machinery Market.

BOSTON, MASS., December 29, 1908.

While the closing week of the year has naturally been a dull one in the machinery market, yet the change since a year ago this time is a great one, for more actual business is being transacted and the promise is for a good beginning for 1909. Business was practically at a standstill Saturday, as well as Christmas Day, the dealers, while keeping their doors open, giving a holiday to most of their employees. It is expected that the large buyers will come into evidence in the market early in the year. Up to the present time they have been noticeably absent. Few purchases from railroads have reached the New England machine tool builders, and in some cases orders for machinery have stipulated delivery after January 1, that the business might not appear on the books of 1908. Heavy machinery is not moving to any great extent. The planer builders, for example, have not experienced any appreciable increase in orders, though inquiries are active and appear to promise a brisk business shortly. Evidences multiply that the pending tariff legislation is retarding business. But the opinion is expressed by some of the best conservative observers in this section that the circumstances which tend to hold back demand are not without their advantages, because they serve to make the resumption of business gradual, instead of starting it in with a rush, a condition which had been prophesied by many business men. In lines kindred to machinery manufacturers are having various experiences. The foundries are more active, though most of them are not running near to full capacity. The boiler builders are in their natural dull season, and are not expecting a brisk year, though they look to the textile mills for some good business in the replacing of existing installations and in new power plants. Announcements of new textile building continue to be made, indicating a season of at least normal increase.

The Massachusetts State Commission on Industrial Education, with offices in the Ford Building, Ashburton place, Boston, is making a general investigation of American machine tools, preparing data which will be used in connection with the equipment of State Industrial Schools. These schools are provided for by legislative act, the State co-operating with cities or towns in their establishment, paying

a share of the cost of equipment and maintenance. The city of Worcester is progressing toward the creation of a school independent of the regular city school system, to be managed by a board of trustees. When it comes to the equipment, the information obtained by the State commission will be valuable, though the actual buying will be done by the city establishing the school, the State agreeing to reimburse the municipality afterward. The general inquiry from the State commission has led many manufacturers to believe that actual business was in sight, but such is not the case.

The supply trade is much interested in the action of manufacturers of leather belting in establishing a resale price. The details of the matter are not wholly settled, it is understood, the trade not being entirely satisfied with the discounts named, but it is believed that the arrangement will be carried out to the mutual advantage of manufacturers and dealers.

The Shawmut Motor Company, Stoneham, Mass., manufacturer of motors and automobiles, is making tentative inquiries for machine tools, with the purpose of replacing the plant recently destroyed by fire. The list, as figured, is a large one; but it is not understood that a final decision has been reached as to whether the transaction will go through.

A dispatch from Hartford, Conn., tells of the incorporation of the American Envelope Machine Company, with authorized capital stock of \$100,000. The company will manufacture envelope machinery. The incorporators are: Sidney M. Grant, Thompsonville, Conn.; Ralph M. Grant, South Windsor, Conn., and Frank Grant, Westfield, Mass.

The Doolittle & Whitehead Corporation, Wallingford, Conn., has been organized to do a general machinist and tool making business in that town, occupying quarters in the Linsley factory on Ivy street. Eldridge Doolittle is president, and Oscar Whitehead, secretary and treasurer.

The Connecticut industrial stocks are showing decided strength, all holding their own in the market, while several have advanced during the past month. The American Brass Company has gone from \$108 to \$110, Colt's Patent Fire Arms Mfg. Company, Hartford, from \$81 to \$83, and the Stanley Works, New Britain, from \$49 to \$50 (par \$25).

Chicago Machinery Market.

CHICAGO, ILL., December 29, 1908.

One of the most encouraging signs pointing to future betterment is the increased demand for machinery noted through the month of December, and the growing number of inquiries that are now coming into the market. An unlooked for improvement set in about the first of the month and continued for a fortnight, when a few days' lull led to the belief that the expected holiday dullness would surely rule during the closing days of the year. The results predicted in this respect have, however, not been fulfilled, for the total volume of business for the month will probably compare favorably with that of any other like period during the year. There is, of course, more or less variation in the experience of machine tool houses, but there is general agreement as to the fact, if not the degree, of betterment realized in the past few weeks. A feature which is regarded as significant of future development, is that included among the orders recently entered, are a number from various manufacturing interests, which have for some time been notably inactive. Purchases and inquiries made by concerns closely allied to the railroads give rise to the inference that more business is to be looked for from this source in the near future. At any rate, it is assumed that those closest in touch with developments in this direction would hardly be adding to their equipment at this time without some sort of assurance that work would soon be forthcoming to employ the additions to equipment already made as well as that contemplated. The effect of such buying has undoubtedly had a beneficial effect upon the general market, since it is recognized that when the railroads resume their normal purchases, things will be decidedly better in all lines. One inquiry from a manufacturer now in the market includes tools amounting to \$10,000.

Although it seemed unlikely that much would be heard of in the way of railroad tool machinery lists until after the first of the year, some are already in the hands of the trade. Of the three lots now being figured on, that of the Chicago & Northwestern is the most important. It is stated upon good authority that the extensive list of machinery required for the equipment of the new Springfield, Mo., shops of the Frisco System, which has been held up for more than a year, will soon again reappear in the market, and will doubtless be placed this time with but little delay, since the shops in which it is to be installed are either altogether or nearly finished.

Machinery Requirements of Chicago & Northwestern Railroad.

Figures have been asked on the following list of tools and machinery by the Chicago & Northwestern Railroad: One set plate straightening rolls, motor driven, capacity $\frac{1}{2}$ in. by 8 ft.; one Lassiter taper bolt turning machine, with full

equipment of tools; one power ramming split pattern molding machine, $16\frac{1}{2}$ x 21 in., to be drilled for pattern plate to suit present machine; one 70-in. radial drill press, motor driven; four 24-in. crank shapers, with chucks; one 90-in. extra heavy, motor driven, quartering machine, equipped with crank pin turning attachment, and steady rest for boring bar; one 800-lb. single frame steam hammer, with anvil; one 48-in. friction cold cutting off saw, motor driven; one 18-in. independent and universal lathe chuck, four-jaw; two 24-in. independent and universal lathe chuck, four jaw; four 18-in. belt driven engine lathes, 6 ft. between centers; one 36-in. belt driven lathe, 8 ft. between centers, without steady rests; one No. 2 universal cutter and tool grinder; one power twist drill grinder, capacity up to 3 in.; one power pipe threading machine, capacity from 1 in. to 4 in., with dies; one 10-in. universal and independent lathe chuck, four jaw; one double head $1\frac{1}{2}$ in. bolt cutter, one head with United States standard from $\frac{1}{2}$ in. to $1\frac{1}{2}$ in. inclusive, second head with 12 thread lead screw and dies in sixteenths from $\frac{7}{8}$ in. to $1\frac{1}{4}$ in., inclusive; one 1500-lb. single frame steam hammer, with anvil and steel dies; one combination power punch and shear 48 in. throat, $\frac{3}{4}$ in. capacity; one universal grinder 12-in. swing, 40 in. between centers; one 36-in. valve facing machine; five 40-in. table upright drill presses; two No. 4 motor driven pipe threading and cutting machines; one twist drill grinder with pointing device for drills up to 3 in.; one portable oil rivet forge; two universal tool grinders, motor driven; one 60-in. throat, right angle belt driven punch, capacity $1\frac{1}{4}$ in. hole, through 1-in. steel; one combination power punch and shear, 48-in. throat, $\frac{3}{4}$ -in. capacity; one self emptying centrifugal oil separator.

The Chicago, Milwaukee & St. Paul Railroad Company is in the market for the following tools: One 48-in. draw cut crossing shaper, low down base and extra heavy swivel vise, complete with direct current motor drive; one 36 x 12 in. by 12 ft. frog crossing planer, extra heavy cross rail and saddles to run approximately 26 ft. per minute, with 3 to 1 return cut, motor driven.

Improvements now under way by the Sioux City Foundry & Mfg. Company, Sioux City, Iowa, include the erection of new steel warehouse, boiler shop and office buildings, which, together with new equipment, will represent an expenditure estimated at \$50,000. The machine and boiler shop will be 75 x 100 ft., with a warehouse of like dimensions. The new plant will be equipped to handle, not only heavier work, but a greater volume of business than heretofore. Among the new machines that will be required are an 8-ton punch, a cold friction saw, for cutting 15-in. I beams, and a 6-ton cupola. Efforts will be made to have the plant ready for operation by April.

The Reynolds Machine Company, Rock Island, Ill., has removed its plant and business to Moline, Ill., where, in addition to its present line of screw driving machines, it will manufacture a hobbing spur gear cutter, which is described as one of the simplest and most nearly "fool proof" tools of the kind ever put out.

The building of a new garage, 37 x 114 ft., is contemplated by Tom. Connolly, Dubuque, Iowa, manufacturer of high grade carriages. The plans include all of the adjuncts and equipment of a modern garage.

The new Process Steel Company, Marshall, Mich., is adding to its plant a foundry, 25 x 110 ft., and a two-story office building. A machine shop department has also been installed, so that the company is now in position to furnish vanadium steel crank shafts and connecting rods in the rough as well as finished. Following the reorganization of the company, the following officers were elected: S. C. French, president; F. A. Stewart, vice-president; H. L. Chapman, secretary and treasurer.

The La Grange Water & Power Company, La Grange, Cal., expects to install an additional 450-kw. generator, and an 800-hp. water turbine, which will duplicate the unit now in service. G. L. Dyer is superintendent.

Cleveland Machinery Market.

CLEVELAND, OHIO, December 29, 1908.

Business with the local machine tool dealers has been very light, as was expected during the holiday season. Dealers, however, are quite well satisfied with the volume of their orders during December, for the market continued active well along in the last half of the month, when the falling off that was looked for during the holiday season began to be noticed. The outlook is regarded quite promising, owing to the fact that inquiries are still coming in fairly plentiful, and considerable buying is expected soon after the first of the year. While no large lists are coming out a number of inquiries have been received during the past few days for two or three standard machine tools. The inquiries are coming from all kinds of manufacturing plants that are planning the installation of some additional machine tool equipment or the substitution of new and modern machine tools for old ones. In addition to late inquiries a

number have been made by some of the larger manufacturing establishments during the past few weeks, it being announced at the time the inquiries were made that orders would not be placed until after the first of the year. Builders of machine tools and of heavy and special machinery are feeling the effects of the holiday season, but they are confident of improved conditions early next month. A number of deals for the purchase of conveying machinery for mines and industrial plants are expected to be closed soon after the first of the year. Very few inquiries are as yet being received from the railroads.

The demand for second-hand tools continues fairly good, and dealers are quickly moving the limited supply that is being placed on the market.

In the foundry trade there is a lull, due to the holiday season, but foundries making light gray castings have considerable more work on hand than several weeks ago, and the outlook is brighter.

The creditors of the Brown-Cochran Company, maker of gas engines, Lorain, Ohio, have accepted the offer of the Johnson Company of Lorain for the purchase of the Brown-Cochran plant. The Johnson Company agreed to cancel its own claim of \$398,000 against the company, and to pay all the secured creditors in full and the unsecured creditors 25 per cent. The Johnson Company expects to place the plant in operation soon.

The Automatic Sewing Machine Company, formerly of Cincinnati, has moved its plant to Ashland, Ohio, after undergoing a reorganization. Machinery is now being installed for the manufacture of sewing machines, which will be started in a small way. The officers are R. P. Dollings, president; C. L. Downey, vice-president; L. M. Helbert, secretary and treasurer.

The Electric Welding Products Company, Cleveland, reports that it has enough orders on hand for automobile parts to keep its plant running at full capacity until May, and that orders are picking up in its cap screw department.

The C. O. Bartlett & Snow Company, Cleveland, reports an improvement in inquiries for coal conveying machinery for mines and industrial plants, and that the outlook is good for a better volume of orders soon after the first of the year.

The Cleveland City Forge & Iron Company reports considerable improvement in the business outlook. Orders for forgings have been scarce for some time, but the company reports that during the past two weeks it has received a number of inquiries from railroads for forgings for new and repair work.

The Mack Iron & Wireworks Company, Sandusky, Ohio, has been incorporated with a capitalization of \$50,000, by A. D. Mack, P. C. Mack, E. M. Blinn, J. D. Mack and J. T. Mack.

The Reverse Draft Furnace Company, Akron, Ohio, has been incorporated with a capitalization of \$20,000, by G. D. Renfield, H. J. Hough, Ray Cook, S. S. Osborne and L. H. Horner.

Cincinnati Machinery Market.

CINCINNATI, OHIO, December 29, 1908.

The local machine tool manufacturers are just now for the most part deep in the annual inventory taking. There are but a very few exceptions with the tool trade in this territory that stock taking is passed over at the turn of the year, but those few exceptions give it quite as much attention at the middle of the year, usually early in July.

For the most part December will show better returns than was anticipated early in the month, and with some tool concerns the last month of the year will go ahead of November, which was figured as the banner month. Shapers and lathes have done exceedingly well, some new types of both recently introduced having had quite a good demand during the month.

Practically all manufacturers in this field are preparing for a phenomenal year: not the tremendous strain of the early part of 1907, but a gradual restoration of confidence which will result in large orders for greatly needed equipment in all kinds of shops throughout the country. Correspondence from dealers in all sections shows that there is a gradual awakening in industrial lines, and with the tariff question safely disposed of and no political questions or labor uncertainties to annoy owners of great industrial plants it is expected that they will come into the market more freely.

The year to come will be an important one for the Cincinnati manufacturing interests. The Oakley colony which will consist of five or six of the largest tool and machinery and sanitary appliance manufacturing interests in this section, will be completed during the year, and all establishments in good working order. The Modern Foundry Company and the Cincinnati Planer Company are already making good headway in their new homes, and others are rapidly getting in shape for early occupancy.

Christmas festivities apparently interfered little with some customers of local tool manufacturing plants. On Saturday the Steptoe Shaper Company received an order for one 24-in. triple gear to go to Buffalo, one 20-in. back gear to Mexico, and two 14-in. single gears to Canada. On Monday the company had an order for a 20-in. back gear.

The Rahn-Carpenter Company, about which much has been published in the matter of removal of shops to Richmond, Ind., reports good business also. It has had several orders for its new 22 x 36 in. swing gap lathe with sliding bed. These orders have come from the North and South. The new lathe is favored as an economical medium, some figuring that with the enlarged swing capacity they can combine the duties of two, another illustration of the conservatism of the times in manufacturing.

The Triumph Ice Machine Company, which is to be one of the new year's additions to the Oakley factory colony, is keeping up its excellent late year record on ice machines. Several orders were received in December. With the very excellent improvement made in the business of this company during the past year, it will be impatient to get into its new quarters, which will give it the desired additional capacity for finishing up work.

For the national convention of the foundrymen to be held in Cincinnati next May the Cincinnati section has held several important meetings recently. At the conference Saturday at the Grand Hotel a committee was appointed to work in conjunction with the Cincinnati Convention League and the Industrial Bureau in preparing entertainment, place of meeting, &c. The veteran foundryman, James Murphy, of Hamilton, read a paper on "Modernizing an Iron Foundry."

The Empire Machine Works, Frankfort, Ind., has taken new and larger quarters at 659 West McClurg street. O. B. Smith, proprietor, has added considerable new equipment.

Philadelphia Machinery Market.

PHILADELPHIA, PA., December 29, 1908.

The market has the usual preholiday appearance. Some little business has been transacted, but it has been very much scattered, and of an individual nature. Buyers as well as sellers are giving their attention at the time to a large extent to preparations for the annual accounting of stocks, and little actual business is expected to come out until this has been completed. In a number of instances, however, orders which have been held back so as to bring them into next year's expenditures are expected to be placed, as they involve no further outlay against the current year, for which the balance sheet on the part of many concerns will hardly show much profit. While there has been a fair amount of inquiry in some directions, a good share has been for the purpose of getting a line on costs for improvements and extensions not yet adopted. Railroad buying shows no forward movement, even further purchases of rails and supplies, which were expected to follow the recent order for rails by the Pennsylvania Railroad, have not materialized, and while developments are expected almost daily they may not come out for some time. The larger industrial establishments have not yet booked sufficient business to make them a factor in the machinery trade, so that little in the near future can be expected from that quarter.

The trade is quite hopeful regarding the future, and it is believed that a forward movement will develop early in the year, although continued discussion regarding tariff revision, while it may not affect the trade directly, will no doubt retard for a time the general development of plans for improvement and extension now under contemplation.

The foreign trade has been inactive, no developments of an importance being reported.

The second-hand machinery market has been dull and listless, reflecting the general condition of the trade, while the same may be said of the boiler and engine trade, both new and second-hand.

Nothing of importance has developed in either the gray iron or steel casting trade. Business is quiet and foundrymen are giving a good part of their attention to the annual stock taking.

The Board of Trustees of the State Institution for Feeble Minded of western Pennsylvania will receive bids until January 13 for the construction of a sewage disposal plant. The specifications, which may be obtained at the office of the Department of Health, Harrisburg, Pa., provide, in addition to the necessary work of excavation and concrete work, for 30 tons of cast iron pipe, special connections and other equipment.

Samuel G. Dixon, Commissioner of Health for the Commonwealth of Pennsylvania, will receive bids at his office, 1900 Race street, Philadelphia, until Monday, January 4, for the furnishing of materials and labor for the construc-

tion of an acetylene gas plant at the State South Mountain Sanitarium, Mont Alto, Pa. The work includes the furnishing and installing of a complete plant, specifications regarding which can be obtained at the office of the Commissioner of Health, Harrisburg, Pa.

The Wright Specialty Company, Greensburg, Pa., has under consideration the erection of a manufacturing plant in that city. Charles Wright of South Greensburg, Pa., is general manager of the company.

The Baldwin Locomotive Works reports somewhat quieter conditions, inquiries having fallen off, while no orders of importance since that recently taken for 14 locomotives for the United States Steel Corporation have been booked. A betterment in the demand is expected after the first of the year, but the recovery, it is believed, may be slow. No change in the number of men employed has been made by this company, although the present working hours may be slightly increased after January 1.

The Board of Trustees of the State Hospital, Danville, Pa., will receive bids until January 14, for constructing a new sanitary sewage system for the hospital, the disposal plant to consist of concrete sedimentation tanks, sprinkling and sand filters, 12-in. cast iron force main, electrically driven and automatically controlled sewage pumps, &c. Plans and specifications may be seen at the office of the superintendent of the hospital, Danville, Pa., or of the engineers, Albright & Mebus, 908 Land Title Building, Philadelphia.

Government Purchases.

WASHINGTON, D. C., December 29, 1908.

The Isthmian Canal Commission will receive bids until January 18, Circular No. 486, for punch and shear, bolt cutter and other supplies.

The Isthmian Canal Commission will soon ask bids for two 25-hp. shunt wound electric motors.

The following bids were opened December 21, Circular No. 482, for machinery for the Isthmian Canal Commission:

Class 1.—Seven marine-boilers—Bidder 32, Coatesville Boiler Works, Coatesville, Pa., \$13,000; 43, P. Delany & Co., Newburgh, N. Y., \$14,175; 53, G. & W. Mfg. Company, New York, \$17,451; 63, Harlan & Hollingsworth Corporation, Wilmington, Del., \$11,999; 71, Kingsford Foundry & Machine Company, Oswego, N. Y., \$12,796 and \$12,292; 73, Lake Erie Boiler Works, Buffalo, N. Y., \$14,350; 84, Manning, Maxwell & Moore, New York, \$13,195; 85, Marine Boiler Works Company, Toledo, Ohio, \$12,953.50; 88, Maryland Steel Company, Sparrow's Point, Md., \$13,825; 91, I. F. Morris Company, Philadelphia, Pa., \$13,475; 98, New York Shipbuilding Company, Camden, N. J., \$15,500; 112, Phenix Iron Works, Meadville, Pa., \$12,700; 116, Pusey & Jones Company, Wilmington, Del., \$12,859; 128, Springfield Boiler & Mfg. Company, Springfield, Ill., \$13,594; 143, Vermilye & Power, New York, \$12,341; 156, Casey & Hedges Company, Chattanooga, Tenn., \$12,600; 162, National Electrical Supply Company, Washington, D. C., \$13,013; 165, Robb-Mumford Boiler Company, South Framingham, Mass., \$14,504; 169, Volk & Murdock Iron Works, Charleston, S. C., \$10,808.

The following bids were opened December 22 for machinery for the navy yards:

Class 41.—Two 12-hp. internal combustion kerosene engines—Bidder 80, August Mietz, New York, \$1325 and \$1500; 113, Remington Oil Engine Company, Stamford, Conn., \$1100.

Class 51.—One electric truck—Bidder 56, General Vehicle Company, New York, \$3500; 122, Studebaker Brothers' Company, New York, \$3435.

Class 52.—Two No. 2 universal tool grinding and shaping machines—Bidder 45, W. H. Foster Company, New York, \$363; 121, William Sellers Company, Philadelphia, Pa., \$535.

Class 53.—One No. 2 universal tool and cutter grinder—Bidder 6, Brown & Sharpe Mfg. Company, Providence, R. I., \$4593.70; 44, Fairbanks Company, New York, \$1079, \$1104, \$1005 and \$1030; 60, Hill, Clarke & Co., Boston, Mass., \$1000; 62, Hendey Machine Company, Torrington, Conn., \$1108 and \$1093; 97, Niles-Bement-Pond Company, New York, \$1065.

Class 71.—One 60-hp. kerosene engine—Bidder 80, August Mietz, New York, \$3700 and \$4000.

The following bids were opened on December 17, for pumps for the new National Museum Building:

Item 1, water service pump; 2, four vacuum pumps; 3, two boiler feed pumps.

Henry R. Worthington, New York, item 1, \$675; 2, \$1458; 3, \$520. Fairbanks, Morse & Co., Chicago, Ill., item 1, \$590; 2, \$900; 3, \$410. D'Olier Engineering Company, Philadelphia, Pa., item 1, \$660; 3, \$450. Buffalo Steam Pump Company, Buffalo, N. Y., item 1, \$595; 2, \$315; 3, \$240.

The following awards have been made for machinery for the Isthmian Canal Commission, bids for which were opened October 22, Circular No. 471:

Browning Engineering Company, Cleveland, Ohio, class 1, one locomotive crane and grab bucket, \$7966.25.

Henry R. Worthington, New York, class 4, for two 6-in. steam cylinder pumps, \$304.37 each; class 5, for two 9-in. steam cylinder pumps, \$285.03; six 6-in. steam cylinder pumps, \$119.51; for six duplex horizontal feed pumps, \$74.95.

Fox Brothers & Co., New York, class 4, for 3½-in. steam cylinder pumps, \$148 each.

Motley, Green & Co., New York, class 5, one pneumatic flue welder, \$685.

Under bids opened November 17, for machinery for the navy yards, the Hilles & Jones Company, Wilmington, Del., has been awarded class 131, one guillotine frame shear, \$2634.

The following awards have been made for supplies for the navy yards, bids for which were opened November 24:

Harron, Ricard & McCone, San Francisco, Cal., class 1, one vertical automatic steam engine, \$280.80; class 2, one patent head engine lathe, \$957.30; class 4, one crank shaping machine, \$565.80; class 5, one grinder head, \$99.65.

Frevert Machinery Company, New York, class 3, one upright drilling machine, \$534.

Pratt & Whitney Company, Hartford, Conn., class 61, six engine lathes, \$869; class 62, two engine lathes, \$1472.

The following awards have been made for machinery for the navy yards, bids for which were opened December 8:

Springfield Boiler & Machine Company, Springfield, Ill., class 131, two Scotch marine boilers, \$2838.50.

Pratt & Whitney Company, Hartford, Conn., class 151, two vertical surface grinding machines, \$1800.

Knox & Bro., New York, class 200, one valve reseater, \$175.

The American Institute of Chemical Engineers.

The first annual meeting of the American Institute of Chemical Engineers was held in the Carnegie Technical Schools at Pittsburgh, commencing Monday morning, December 28. Nearly 50 per cent. of the membership was present. This society was organized only a short time and has about 100 members. At the meeting just held applications for membership were received from Spain, Cuba, England and Hungary. In the basement corridor was an exhibit of chemical appliances, which were of much interest to the members.

A business session was held on Monday morning, and in the afternoon the delegates inspected the Homestead and Duquesne works of the Carnegie Steel Company. On the same day an election of officers was held, all the old officials being re-elected, as follows: President, Samuel P. Sadler, Philadelphia; vice-presidents, Charles F. McKenna, New York; H. A. Hunicke, St. Louis, and Edward G. Acheson, Niagara Falls, N. Y.; secretary, John C. Olsen, Brooklyn; treasurer, William A. Booth, Syracuse, N. Y.

At the session on Monday evening R. K. Meade of Easton, Pa., delivered an address on the use of pulverized coal for heating purposes. Tuesday morning a number of papers were presented, and in the afternoon the delegates visited the plant of the Westinghouse Machine Company at East Pittsburgh and the Government Testing Laboratory in Arsenal Park, Pittsburgh.

Customs Decisions.

Sheet Steel in Strips.

The Board of United States General Appraisers has sustained protests filed by George Nash & Co. and Frank A. Tasker of New York. The importers objected to the assessment on certain merchandise of duty at the rate of 45 per cent. ad valorem as "sheet steel in strips," it being maintained that the goods should be allowed to enter at the specific rate according to value per pound as "steel in all forms and shapes not specially provided for."

Another decision has been handed down by the board sustaining a claim filed by George Nash & Co. It is held by the board that the assessment of an additional duty of 1 cent per pound on certain steel strips, which have been cold rolled, is illegal. General Appraiser Fischer, who writes the decision for the board, holds that the ordinary tax on the strips is sufficient. The additional tax is accordingly set aside.

The New Haven, Conn., plant of the American Steel & Wire Company, formerly operated by the National Wire Corporation, will be started up soon, but in a comparatively small way. The wire drawing mill will begin with a force of about 100 men, and the number will be increased gradually to perhaps 300, which does not mean the full capacity of this department of the works. Eventually, when a rush of business is experienced and the plant is working full, probably the force will be close to 1000. The works will be operated under the management of the Worcester office, with Edward H. Parker as resident manager.

The Portland Oxy-Acetylene Welding & Fixture Company, Portland, Ore., has been organized to do all kinds of metal welding by the oxy-acetylene welding process.

HARDWARE

THE passing of another year, which, notwithstanding the slower movement of trade, has been characterized by progress and change in business conditions and methods, will suggest to many the very different state of things which prevailed when the country was first entering on its marvelous career of manufacture and development. Up to within a few years the unique relations between the employer and employee in the Eastern States, and especially so in the rural towns of New England, provoked much favorable comment from visiting foreigners as well as from persons from other parts of the country. It was, for example, no uncommon thing for the head of the factory, upon some errand in connection with his duties, to be found in the factory or in the factory yard when the whistle blew to announce the end of the day's labors. Very likely the "boss" would be greeted by 50 or 100 workmen as they passed out, to whom he would reply in a pleasant, familiar manner, calling them by name, and often inquiring in regard to their families, evincing a genuine interest in his people and their affairs. This meant more than mere dollars and cents. Their respect for each other was mutual and sincere. Fortunately this has not become entirely a thing of the past.

How this much-to-be-admired state of affairs came to exist can easily be traced to its source. It goes back to the small beginnings of manufacturing. Throughout New England, and more especially in Connecticut and Massachusetts, the various streams which abound in all the valleys began to be utilized for power by means of which ingenious and industrious men turned out "Yankee inventions." As the years went by their trade increased and neighbors were "hired to help out." The business kept growing and the plant enlarging until there was the development of an important industry. Many a large and flourishing manufacturing firm in these States was founded in just such a primitive manner. The sons of the employer and employee were sent to the common school together, and in due course the one took his place in the business and the other in the workshop, but the bond of fellowship formed in their youth remained unsevered in spite of difference in material welfare.

While in some remote parts this condition of things may still occasionally be found, it is to be sincerely regretted that this bond of good fellowship and personal interest, as a generality, has disappeared or is fast disappearing. The growth of the factories, whose employees have increased by leaps and bounds, put masters and men in an entirely different relationship. Competition required the invention and installation of automatic or semiautomatic machinery. It was soon found that unskilled labor could be taught to care for these machines, possibly under the direction of one skilled mechanic, thus enabling a marked reduction in costs to be effected. The great influx of foreigners furnished much of the unskilled labor, and so, the men with unpronounceable names have in a great measure taken the place of those whom in former times the employer was able to meet upon a friendly, equal footing. In the changes which have taken place as a result of the advance of economic progress there have been both gains and losses.

Condition of Trade.

The year closes with an admirable condition of things in matters commercial and financial, with cheerfulness in regard to the prospects for business in 1909. Most of the factories are fairly busy on orders and in accumulating goods for spring trade, so that they may be in a position to execute promptly the orders, large or small, which will come to them in connection with the quickening trade anticipated after the opening of the year. While the possibility of a reduction in the price of raw material as a result of changes in the tariff or of other influences which may affect the market, naturally induces conservatism and caution, the general outlook for trade is such as to make manufacturers feel justified in preparing for a good volume of business. They are thus applying to their interests the principle which is recognized as applicable to the distributors of goods—that it is poor policy to let a possible decline in some values lead to inactivity or neglect in the regular carrying on of business. Throughout the country the stocks of Hardware merchants are generally fairly complete and well assorted, although the effect of the carefulness with which goods have been purchased has been to prevent overstocking. During the past month, too, much more attention has been given to selling than to buying, and the trade which culminated in the holidays has probably cut into assortments which will soon call for replenishing orders. Some of the jobbing houses have of late been making contracts for goods for early delivery with normal liberality, and will enter upon the new year with many of their requirements for some months at least well covered. This is an indication of the hopeful way in which the business for next year is regarded. While the repressing effects of the financial and commercial disturbances of the year are not entirely a thing of the past, the trade are taking a cheerful view of the future of business and anticipating the early development of activity and a prosperous new year.

Chicago.

With the actual selling forces of manufacturers and jobbers inoperative because of the withdrawal of salesmen from their respective fields on account of holiday vacations business is naturally quiet. The interim between now and the second week of January will probably be largely occupied in reviewing the past year's work and planning for the future, so that in the meantime an uneventful period is expected. A backward glance over the past year reveals a degree of prosperity in the Hardware trade great enough, in view of the obstacles encountered, to be regarded as fairly satisfactory. Indeed, a comparison with results in other lines would doubtless show that the Hardware business suffered less, recovered earlier and improved more than almost any other. Profits were diminished, it is true; but, owing to economies effected by retrenchment and closer scrutiny of details, they were not reduced in proportion to the shrinkage in volume of business. Another effect of the trying experiences of the year has been to inspire confidence in the management and financial stability of all concerns that have withstood the tests imposed by the panic and subsequent business depression. If hopefulness of the future is any criterion of what is to come, the new year will open the way to fuller employment of the energies of the country in all lines of trade. Since the recent advance in Poultry Netting was announced orders for spring shipments have improved. Buyers who have been holding off with the expectation of securing lower prices later on seem to be convinced that no such advan-

tage is likely to be gained by delay, and they are therefore coming into the market. Although no similar action has been taken with reference to Woven Wire Cloth, the close relation between this line and Poultry Netting leads to the assumption that an early advance in price is not unlikely. The heavier movement of Wire Cloth noted during the past week is doubtless due to such apprehension on the part of buyers.

NOTES ON PRICES.

Wire Nails.—The amount of business being received at the mills is light, as the requirements of the trade are small at this season, and most of the salesmen are off the road. The market is in good condition, as prices are maintained during this period of inactivity. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00
Less than carloads to jobbers.....	2.00
Less than carloads to retail merchants.....	2.10

Galvanized Nails are quoted at \$1 over the price of the regular Nails.

New York.—Business has been of moderate proportions during the holidays and is likely to continue so until inventory taking is out of the way. Nails are held on the basis of \$2.30 per keg, in small lots at store, but some sellers are occasionally inclined to shade this figure.

Chicago.—The demand for Wire Nails is very quiet, consisting chiefly of small orders required to supply current needs. Salesmen are all in for the holiday vacation and will not return to the field until after the first week of the new year. In the meantime but little is expected in the way of new business. Prices continue firm, being, we are advised, uniformly maintained: \$2.13 in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—As usual at this season, new demand for Wire Nails has shown a marked falling off, but is expected to show betterment very early in the new year. Jobbers and consumers alike have been busy this month taking inventory and closing the year's business and have not been desirous of making new contracts. Active efforts to make sales at this period are not being made by the mills, which have withdrawn their men from the road until after the first of the year. We are advised that the outlook for the Wire Nail trade for the new year is very promising. Prices are reported as being maintained on the small amount of new business that has been placed recently. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00

Galvanized Nails are quoted at \$1 over the price of the regular Nails.

Cut Nails.—The comparatively small number of orders received by the mills are for limited quantities, which is a condition not unlooked for at this time of the year. Stocks throughout the country are supposed to be light, owing to the policy pursued for some time of ordering for immediate requirements only. The price for Steel Cut Nails is \$1.80, base, per keg, f.o.b. Pittsburgh, for less than carloads, and \$1.75 for carloads and larger lots. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—The local market is unchanged, as far as demand is concerned, requirements being somewhat light at this season. Steel Cut Nails are held on the basis of \$2.15 per keg for small lots at store, but this price is not strictly adhered to by all sellers.

Chicago.—There is not much doing in the market just now, business being halted for the present by the

holiday dullness. Orders are principally for small lots needed for stock assorting. A better movement is expected when business begins in earnest after January first. Except for a possible shading of 5 cents a keg on desirable orders, prices are maintained with reasonable firmness. We quote Chicago prices as follows: In car lots to jobbers, Iron Cut Nails, \$2.08; Steel Cut Nails, \$1.98.

Pittsburgh.—New orders for Cut Nails and specifications against contracts are light, but the mills are not very anxious to enter contracts for long periods of delivery ahead, owing to the high prices ruling for Steel Billets and Nail Slabs. It is stated that the margin of profit in Cut Nails at present is very narrow. The market is \$1.80, base, per keg, f.o.b. Pittsburgh, but \$1.75 is made on carloads and over. In the Western market Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

Barb Wire.—The expectation of manufacturers is that soon after the opening of the new year demand from the Southern part of the country will show itself. At present there is very little doing in Barb Wire. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

Chicago.—Pending the opening of business for the spring trade new orders are few and scattering. Soon after the first of the year active buying should begin in the South and Southwest, when a fairly heavy demand is expected. The temporary dullness has not affected prices, which remain firm and unchanged. Quotations are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—This season of the year always shows an almost utter absence of new buying of Barb Wire, and the present is no exception. A heavier demand is expected from the South and Southwest when spring trade opens early in January, this section of the country usually being the first to contract ahead for its requirements. We are advised that prices are being well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

Plain Wire.—Conditions ruling in the Barb Wire market apply to that of Plain Wire. Manufacturers are looking forward to a revival of business after the first of the year. Prices are reported as being well maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

	Nos.	6 to 9	10	11	12 & 12½	13	14	15	16
Annealed.....	\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35	2.35
Galvanized.....	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95	

Chicago.—The year just closing has been, all things considered, quite satisfactory in the Wire trade. The total volume of business will, it is estimated, foot up between 75 and 80 per cent. of that of 1907. Just now consumers of Plain Wire are buying sparingly, but prospects for a more active demand early in the coming year are encouraging. We are advised that prices are being firmly held at the established schedule. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

Pittsburgh.—Incident to the late season of the year, new orders for Fencing and other Wire products are light. It is expected, however, that early in January buying will be more active, as jobbers and consumers have been taking inventory and closing the year's business dur-

ing this month. We are advised that regular prices are being well maintained, in spite of the small amount of new business being placed. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12 & 12½	13	14	15	16
Annealed	\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Conductor Pipe, Etc.—Considerable irregularity is now observed in the market for Conductor Pipe, Eaves Trough, &c. Established quotations are maintained only in a few sections and on small orders. Copper lines are a trifle stronger than Steel and Iron because Sheet Copper is on a little higher level than a few months ago. Elbows and Shoes are reasonably firm.

Traps.—Prices on Game Traps recently established by leading manufacturers show no change from those of last season. The market on Oneida pattern Traps may be represented by a discount of 75 and 10 per cent.

Oilers.—The market on Copper Plated Steel Oilers continues weak, as reported in our columns a couple of weeks ago. The irregularity seems also to have been communicated to all varieties of Oilers.

Elmore Tool Mfg. Company.—Following are the quotations on the Screw Drivers, Ice Picks, Awls, Punches and other goods manufactured by the Elmore Tool Mfg. Company, Hartford, Conn.:

	Discount.
Indestructible Screwdrivers	55 and 7 %
Standard Neverturn Screwdrivers	66 % %
Star Screwdrivers	75 and 5 %
Hartford Screwdrivers	66 % %
Ice Picks	55 and 7 %
Standard Ice Picks	66 % %
Scratch Awls	60 %
Tinners' Awls	55 and 7 %
Brad Awls	55 and 7 %
Screwdriver Bits	25 %
Nail Sets	30 %
Machinists' Center Punches	40 %
Diamond Point Chisels	50 %
Cape Chisels	50 %
Cold Chisels	50 and 5 %
Machinists' Chisels	55 and 5 %
Tinners' Solid Punches	50 %
Tinners' Prick Punches	50 %
Drop Forged Tack Pullers	10 %
Gas Pliers	70 %
Star Nail Pullers	40 %
Wire Cutter and Pliers	75 %
Shoemakers' Hammer	75 %
Frying and Pinch Bars	75 %
Compound Lever Bar	75 %
Box Chisels	50 %
Combination Hatchets	40 %

Window Glass.—The aspect of the Window Glass situation has been entirely changed by the members of the National Window Glass Workers, an association including all branches of the Glass workers' craft, carrying out their threat to strike if the flat scale of wages was not accepted by both machine and hand operated Glass factories. It is understood that practically all the hand operated factories and the American Window Glass Company, the latter operating machine factories, have closed down because they would not accept the new wage scale, and withdrawn prices. The few hand operated factories that signed the flat scale are quoting 90 and 20 per cent. discount on Single and 90 and 25 per cent. discount on Double Strength Glass, for limited quantities, from manufacturers' list of January 1, 1901. The Western Window Glass Jobbers' Association has adopted discounts from the jobbers' list of October 1, 1903, which is about 25 per cent. higher than the manufacturers' list, as follows: Single, 90 and 25 per cent.; Double, 90 and 30 per cent. The Eastern Window Glass Jobbers' Association, pending a meeting to be held this week, has adopted the same discounts. The changed conditions in the Glass situation have brought again to the front the plan of forming the Imperial Glass Company, which had been temporarily abandoned because all factories could not be induced to come in. It will be recalled that this was the selling corporation proposed in September to handle all orders received by the hand operated factories.

The prospects for successfully carrying out this project are now said to be more encouraging.

Rope.—Holiday quietness pervades the Cordage market, as traveling men are all in and closing up the year's business is occupying the attention of customers. Purchasing has been along conservative lines during the year, and stocks in buyers' hands are regarded as low. It is hoped that the coming 12 months will show a better record. Quotations on small quantities of Rope, 7-16 in. in diameter and larger, remain as before: Pure Manila, 8½ to 9 cents; Pure Sisal, 6½ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼-in. and up, No. 1, is 6½ to 6¾ cents; No. 2, 6 to 6½ cents.

White Lead in Oil.—The amount of new business being placed is comparatively light, but well up to the expectations of manufacturers. The market remains firm notwithstanding this inactivity. Quotations are as follows for the best brands: Lots of 500 lb. and over, in 100-lb. kegs and upward, 6¾ cents per pound; in lots of less than 500 lb., ½ cent per pound advance.

Linseed Oil.—The Oil market reflects the strong position of Seed, so that it is not affected by the lack of activity in buying which has been somewhat more pronounced during holiday week. The Oil now in manufacturers' hands has been crushed from high priced seed and there is apparently little prospect of much lower prices. The car lot price is recognized as being about 46 cents, as sales for nearby delivery are reported at that figure. Quotations in 5-barrel lots are unchanged, as follows: State and Western Raw, 47 cents per gallon; City Raw, 48 cents per gallon. Boiled Oil is 1 cent advance on Raw.

Spirits Turpentine.—Although prices are the same as a week ago, there is a more confident tone to the market in anticipation of more liberal buying after the first of the year. Demand is exceedingly light. The New York market is represented by the following quotations: Oil Barrels, 41 to 41½ cents; Machine Made Barrels, 41½ to 42 cents per gallon.

Ninth International Automobile Show.

THE ninth international automobile show, at the Grand Central Palace, New York City, under the auspices of the American Motor Car Manufacturers' Association, will open New Year's Eve, December 31, and continue until January 7, inclusive. Some idea of the scope of the exhibition is afforded by the statement of the management that there will be 77 manufacturers of complete motor cars and 230 makers of accessories represented. There will be 66 distinct types of pleasure cars and 11 makes of commercial vehicles, which will include everything from a low powered delivery wagon costing about \$500 up to huge three and ten ton trucks selling at from \$3000 to \$6500. An interesting portion of the pleasure vehicle exhibit will be the importers' salon section, at which will be displayed for the first time in this country the latest 1909 models of a dozen of the leading imported cars direct from the Paris salon.

Cleveland Wire Goods Company.

IN a reference to the Cleveland Wire Goods Company, Cleveland, Ohio, in our last issue mention was made of Hermann Boker & Co. as sole agents for the company's products. This, however, is only the case with various styles and kinds of Chain made by a patented process. In other lines manufactured by the company they are represented by J. C. McCarty & Co., 21 Murray street, New York, covering Spooled Wire, Stove Pipe Wire in 50 ft. coils, Solid Wire Clothes Line and Folding Trellis, Border and Supports.

BARNEY & BERRY. Springfield, Mass., are sending out a fine calendar for the skating season, ending with March, illustrating in color a skating scene of a century ago, handsome enough to frame, all advertising matter being attached, but not a part of the picture.

AMONG THE HARDWARE TRADE.

The Wittker Hardware & Contractors' Supply Company has succeeded the Brinkmeyer Hardware Company, St. Louis, Mo., the change being one of corporate name only, all other conditions of the business remaining the same.

The J. M. Clifton Hardware Company, Dawson, Ga., has been incorporated with a capital stock of \$10,000. At the first stockholders' meeting the following officers were elected: President, J. W. Glass; vice-president, A. J. Hill; secretary and treasurer, W. R. Cox; general manager, J. M. Clifton.

The Ware-Watts Hardware Company, Orange, Va., whose store was burned out some time since, has resumed business under the name of the Ware-Watts-Gill Hardware Company, the members of the company remaining as before. The lines handled include Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

The stock of Hardware and Mine Supplies carried by the Weeks-Betts Hardware Company, Prosperity, Mo., was recently damaged by fire to the extent of \$10,000.

Frank A. Osborn & Son, Goshen, Ind., heretofore engaged exclusively in the sale of Farm Implements, will add to these lines a general stock of Hardware, including Wagons, Buggies, Harness, Gasoline Engines, Cream Separators, Feed Grinders, Paints, Oils, Greases, &c. The firm is also preparing to build light vehicles to order.

Irish & Eyman, Raymond, Kan., have been succeeded in the Hardware business by the Boy Lumber, Hardware & Furniture Company, in whose stock will be included Harness, Pumps, Cement, Plaster, Glass, Paints and Oils.

Selden Weber has disposed of his Hardware business, which he has conducted continuously for the past 39 years at Warsaw, Ind., his successors being G. F. Liebrock and H. B. Gerard, who will take possession on January 1, under the firm name of Liebrock & Gerard.

The Hardware stock and business owned by Eikenberry Brothers, Marion, Ind., has been purchased by McGrew & Bury. They will readjust the stock and continue the business in the same location.

C. W. Cisue, who for 21 years has conducted a Hardware business at Cherokee, Iowa, has sold out to Keys & Cargin, who will take possession January 1.

The Hardware and Lumber business in Roslyn, L. I., N. Y., which has been conducted for the past 20 years under the firm name of John D. Hicks & Co., will, after January 1, be carried on by the surviving partners under the firm name of Conklin, Tubby & Conklin. Mr. Hicks died a year ago.

A bad fire occurred last month in the store of C. A. Carlson, Frederick, Wis., causing almost a total loss, which was partly covered by insurance. He had policies in both the Minnesota and Wisconsin Hardware Mutuals, both of which were paid within three days.

A new Hardware store will be opened at Chariton, Iowa, about February 15, by Dunshee Brothers, who have purchased the stock of H. H. Larimer, which will be increased by the addition of a full line of Farm Implements, Windmills, Pumps, Buggies, &c.

The Kneeland Hardware Company has embarked in the retail business in Emporia, Kan.

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Death of Warren D. Rollins.

WARREN D. ROLLINS of the firm of John G. Rollins & Sons, 15 Whitehall street, New York, and head of the London branch, died suddenly of pneumonia in London, December 19, after a brief illness. Warren D. Rollins was the son of John G. Rollins, Sr., a native of Maine, who founded the business in the 60s in London of introducing American manufactured products, such as Hardware, Tools, Agricultural Implements, House Furnishing Goods and kindred lines, and was born in England. He returned to the United States with his father and other members of the family in the 90s, and as the time came for going into business was employed by the Enterprise Mfg. Company, and afterward by the Yale & Towne Mfg. Company, until he joined his father and brothers in carrying on the business of John G. Rollins & Sons, spending his time of late years at the London branch, 124 Holborn, E. C.

Trade Items.

HENDRICKS BROTHERS, 49 Cliff street, New York, importers of and dealers in Copper and kindred metals and manufacturers of Sheet Copper, Bolts, Rods, Wire and numerous forms of Copper material, have distributed a handsome pocket leather bound diary for 1909, with maps and much useful data.

THE KNOXVILLE TINWARE MFG. COMPANY, successor to Hill-Lloyd & Co., Knoxville, Tenn., will enlarge as rapidly as possible the manufacturing part of the business, which at present includes Cans of all kinds, both tin and galvanized and wood jacket. The company will deal largely in Tin Plate, Sheet Metals, Tinnings' Supplies, Roofing Material, Stoves, Hollow Ware, Enamored and Galvanized Ware and kindred lines. The company's territory extends from Virginia and Kentucky to Florida, including the Carolinas, Georgia and Alabama. The officers are as follows: J. A. Moncrief, president; T. H. Stewart, vice-president, and W. F. Lenoir, secretary and treasurer.

JOHN H. BAIRD, who has been identified with the Joseph Dixon Crucible Company, manufacturer of graphite products from crucibles to lubricants, polish and lead pencils, crayons and erasers, has re-established himself at the New York headquarters of the house, 68 Reade street, having been located at the works in Jersey City, N. J., for the past year or two. Mr. Baird has been with the Dixon Company since 1884.

C. C. NARET, long the New York representative of the Arcade Mfg. Company, Freeport, Ill., manufacturer of Coffee Mills and Cork Pullers, House Furnishing and Hardware specialties, has removed his sample room and office from 97 Warren street to 109 Murray street, New York.

F. L. SCOTT, formerly of the Scott Hardware Company, Paducah, Ky., has moved to Denver, Colo., where he will be district manager of the Dictaphone Company of America, his office being 608 Kittredge Building.

THE HORTON MFG. COMPANY, Bristol, Conn., has issued a very handsome calendar in the interest of its Bristol Steel Fishing Rods. This calendar will be sent upon request to merchants handling Fishing Tackle; others will be sent a copy on receipt of 15 cents.

THE SICKELS, PRESTON & NUTTING COMPANY, Davenport, Iowa, is sending out, as a Christmas favor, a collection of six artistic and attractive pictures, 11 x 14 in. in size. The views are reproduced by color photography from modern paintings.

THE KIEFER-HAESSLER HARDWARE COMPANY, Milwaukee, Wis., has been awarded the contract for Hardware trimmings, including Locks, Hinges, &c., for the new auditorium in that city. The Hardware will be of special design and will be manufactured by the Russell & Erwin Mfg. Company, New Britain, Conn. The contract amounts to about \$1500.

GEORGE C. WEAVER, who has represented Hermann Boker & Co. as a traveling salesman for 25 years, was the honored guest at a banquet given at Martin's, De-

cember 29, by C. H. Hawkins, manager of the Cutlery department, 14 of Mr. Weaver's associates being present. Carl F. Boker, head of the house, presented Mr. Weaver with a handsome silver loving cup as a token of the esteem in which he is held, and the employees gave him a fine scarf pin, having a pearl center surrounded by 11 diamonds.

THE BARR HARDWARE COMPANY, Greenville, S. C., has been awarded the contract for the plumbing and steam heating in the Ottaway Hotel, now under construction in that city; also the contract for the plumbing, steam heating and metal work for the addition to the post office and court house in the same place.

THE WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn., is distributing a very striking hanger, 25 $\frac{1}{2}$ x 33 in., printed in a dozen colors, on heavy coated paper. It is suggested by the company that if the merchant will give it a place in his window it will serve to draw attention to his entire line.

THE Christmas circular of the Callender Hardware Company, Angola, Ind., is a reprint of a large advertisement which has lately been appearing in the local paper. It enumerates many goods, with prices, classified for the housekeeper, for the young woman, for the man, for the boys and girls and for the baby.

FOR SERVING the double purpose of illuminating store fronts and show windows, the General Electric Company, Schenectady, N. Y., is calling special attention to its G-I Flame Arc Lamps. For this service the Lamps are suspended from suitable supports just above the top of the window. It is pointed out that these Lamps emit an unusually brilliant light when in operation, thus attracting special attention and increasing the advertising value of the window. The entire globe appears filled with a luminous gas, and, although the light has the property of penetrating fog or smoke, it is soft and not blinding to the eye. Carbons giving a yellow or orange colored light are generally used, but carbons may be obtained that will give a light of a red or white color. All clock mechanism is eliminated in the construction of the Lamp, making it simple, and the carbons are placed at such an angle as to form a V, the arc forming at the lower end. This is to direct all of the light downward and the absence of obstructions below the arc prevents the formation of shadows.

CALENDARS, while not apparently as numerous as in former years, have been issued by the following manufacturers among others:

F. E. MYERS & BRO., Ashland, Ohio, Pumps and Hay Tools.

HAZARD MFG. COMPANY, Wilkes-Barre, Pa., Wire Rope.

DIAMOND SAW & STAMPING WORKS, Buffalo, N. Y., Hack Saws, &c.

REPUBLIC IRON & STEEL COMPANY, Pittsburgh, Pa.

S. B. MARTIN, Dalton, Ohio, Barn Door Hangers and Store Ladders.

BLAKE & JOHNSON COMPANY, Waterbury, Conn., Metal Working Machinery, Screws, Rivets, Nuts, &c.

JOHNSON HARVESTER COMPANY, Batavia, N. Y.

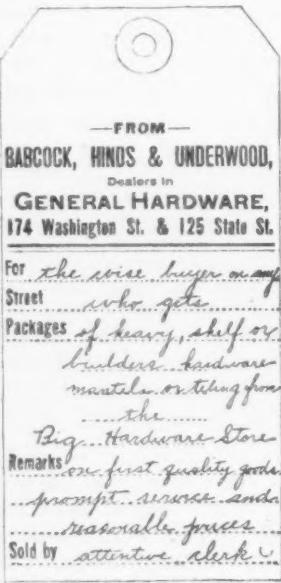
DRAPER COMPANY, Hopedale, Mass., Set and Cap Screws, Special Screws, &c.

HANSEN & LOWE, Atlantic City, Iowa, handling Farm Machinery, Implements and Vehicles, are preparing to open a Hardware store in the building formerly occupied by J. C. Yetzer with a similar line. It is expected that the new store, which has been equipped with Warren Hardware cabinets and shelving, will be ready to begin business on January 1.

THE FINLEY HARDWARE COMPANY has been incorporated in Antlers, Okla., with a capital stock of \$8000. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting Goods, Wagons and Carriages.

TAG ADAPTED AS AN ADVERTISEMENT.

WHAT proved to be a very effective advertisement for Babcock, Hinds & Underwood, wholesale and retail Hardware, Binghamton, N. Y., was the tag reproduced herewith in reduced size, the actual tag being about 5½ x 2½ in. The tag was the firm's regular delivery style, the words having been written in and an etching made and used to print from. The etching cost about \$1 and the tags \$1.07 per 1000. The tag was given extensive circulation among the 40,000 attendants at the Broome County Industrial Exposition, which was held in the fall, and doubtless enforced the importance and progressiveness of "The Big Hardware Store." The firm occupied a booth at the exposition, and on the first day distributed nearly 5000 tags. The demand for them was so great that at times four of the clerks were occupied in handing out the tags, as well as other advertising matter issued by the firm. Next day it was discovered that another firm had floated an identical tag in size and color, bearing its own advertisement, which was accepted as evidence that the tag had hit the mark. The tag was the clever idea of J. Herbert Toal, who prepares the effective advertising got out by this house.



A PARADE FLOAT.

THE float here shown was arranged by N. C. Madsen, Ludington, Mich., and used in a recent parade. In making the Hardware display a short section of shelving was used, with packing boxes fitted in the openings as substitutes for the regular drawers. These were mounted with samples of Shelf Hardware, &c., on both ends. A sample board was placed on the shelving, and Tools were arranged on both sides of it. In front of the Hardware display was a base burner Heating Stove and in the rear a Steel Range. The cost of getting up the float was about \$7.50, not counting labor. The larger portion of the expense was for signs and bunting, the latter being plentifully used. It is gratifying to learn that the float captured the first prize, though the object in entering the parade was for the advertising it would give, prize winning being a secondary consideration with Mr. Madsen, who is an enterprising Hardwareman, always on the alert to keep his business prominently before the public.



A Parade Float.

will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

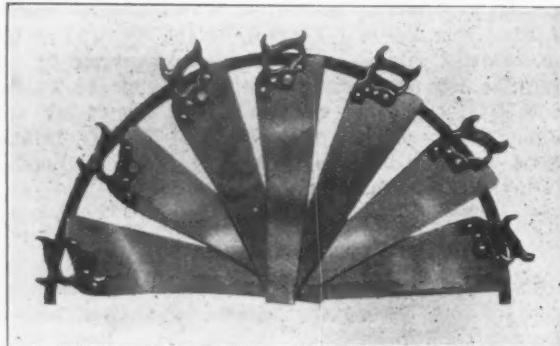
Fallers & Seymour have purchased the business of M. C. Joyce, Syracuse, Neb., and will carry Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Athletic Goods and Harness.

Wheeler & Fowler, Tulon, Ill., a new firm, is successor to R. E. Wheeler and Davis & Fell in the retail Hardware business in that city. The latter firm retires after an existence of more than 30 years. The new firm will handle the regular lines of Hardware and Implements and will maintain a roofing and tin work department.

T. C. Smyth, Sandy Lake, Pa., has purchased the stock of Arthur H. Tryon, Leroy, N. Y., and will carry a line of Hardware, Stoves and Furnaces.

AN INGENIOUS WINDOW DISPLAY OF HAND SAWS.

THE window display of Hand Saws shown herewith was made with a buggy wheel rim covered with black cloth and was 3½ ft. wide. The Saws were fastened to the rim with light copper wire, while the background of the window and the floor was covered with black cloth. The window is 3 x 7 ft. in size and is lighted by electricity. The display included the different kinds



An Ingenious Window Display of Hand Saws.

of Saws used in that section, and an increased sale of these goods was directly traceable to the display. The goods were shown in the window of E. F. Hertz, Sheffield, Ill., and were arranged by Fred. Runft, an employee.

The stock of the Park Hardware Company, Warren, Ohio, has been sold by the Smith-Denison interests to C. L. Bailey, R. A. Cobb and others, who will retain the old title and continue the business without increasing the authorized capital, which is \$50,000. L. & S. Denison will retire from the business and the management will be assumed by Mr. Bailey, who has been with the company for many years.

The Carroll County Hardware Company has purchased the stock of Dallas Walker, Berryville, Ark., and

E. G. Gard, Toledo, Iowa, has purchased the Hardware business formerly owned and operated by P. Jones.

HARDWARE FREIGHTS.

TRACING FREIGHT SHIPMENTS.

BY courtesy of W. C. Heller & Co., Montpelier, Ohio, manufacturers of Steel Hardware Shelf Boxes, Shelving, Screw and Bolt Cases, &c., we are able to reproduce herewith some blanks which they have devised

Wabash R R Co		Montpelier, Ohio. 2/17/1908
<i>J. E. Gege agt</i>		
Dear Sir:	Kindly put a tracer on our shipment of	
Car No.	Six	Cases of Adware
Shipped to:	F. A. Hull & Son	
Via:	Danbury Conn	
and report date of delivery, or cause of delay.		
Yours very truly,		
W. C. HELLER & CO.		
<i>[Signature]</i>		
FIRST NOTICE		
SECOND NOTICE		
THIRD NOTICE		

Fig. 1.—Blank Requesting Railroad Company to Start Tracer, Duplicate of Which Goes on File.

for use in connection with tracing shipments. The blanks are bound up in block form with white, yellow and pink sheets alternating. They are written in triplicate by using carbon paper, the white sheet, or original, going to the railroad company marked first, second or third notice,

Wabash R R Co		Montpelier, Ohio. 2/17/1908
<i>J. E. Gege agt</i>		
Dear Sir:	Kindly put a tracer on our shipment of	
Car No.	Six	Cases of Adware
Shipped to:	F. A. Hull & Son	
Via:	Danbury Conn	
and report date of delivery, or cause of delay.		
Yours very truly,		
W. C. HELLER & CO.		
<i>[Signature]</i>		
FIRST NOTICE		
SECOND NOTICE		
THIRD NOTICE		
F. A. Hull & Son		
Danbury Conn		
Lis		
As per your request of the 2-15-1908 we have put a tracer on your shipment of the Jan 31 1908 as per above copy and hope goods will come forward promptly. Yours very truly,		
W. C. HELLER CO.		
<i>[Signature]</i>		

Fig. 2.—Duplicate of Request to Trace, with Accompanying Acknowledgment Which Goes to Consignee.

as the case may be, by crossing off the phrases which do not apply, as shown in the illustrations. The yellow sheet is retained for filing and the pink one with attached acknowledgment (Fig. 2), goes to the consignee as evi-

dence that attention has been given. The firm has found the blanks a practical and time saving method of following up delayed shipments.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

OTIS ELEVATOR COMPANY, New York and Chicago: Catalogue, 20 pages, devoted to views and descriptions of Hand Power Elevators, Dumb Waiters, &c., specifications to capacity and construction being given with each size shown. A Hand Sidewalk Elevator is also included.

W. C. HELLER & Co., Montpelier, Ohio: Illustrated catalogue with net price-list relating to Steel Hardware Shelf Boxes, Bins, Cases, Drawers, Cabinets, Counters, Rolling Store Ladders, &c.

BOSTON PRESSED METAL COMPANY, Worcester, Mass.: Folder illustrating and describing the Household Banks, which are recommended for individuals, families, banks and trust companies, retailers, premium use, &c.

ARLINGTON MFG. COMPANY, Canton, Ohio: Catalogue of Technical Paints, including Carbonelastic Coating, a Paint covering for the protection of steel from rust and corrosion, gases, alkalies and other deteriorating influences; also Galvanized Steel Paint for use on galvanized surfaces, where ordinary Paints fall to give satisfaction.

MANHATTAN ELECTRICAL SUPPLY COMPANY, 17 Park place, New York: Illustrated folders and price-lists of a varied line of Electrical Articles suitable for Christmas gifts, grouped under the heading of Holiday Suggestions.

NEWMAN CLOCK COMPANY, Chicago, and 178 Fulton street, New York: Illustrated catalogue of Time Recording Devices, Watchman's Clock Systems, &c.

H. G. OSBORNE, 74 Cortlandt street, New York: Illustrated folder of Osborne's extension Brick and Stone Drill, consisting of a hardened steel drill head, which can be screwed onto a threaded gas pipe.

NATIONAL CYCLE MFG. COMPANY, Bay City, Mich.: Catalogue devoted to a line of Bicycles, both chain and chainless.

SIDNEY HOLLOW WARE COMPANY, Sidney, Ohio: Complete catalogue, No. 20, relating to high grade Cast Iron Polished and Nickel Plated Hollow Ware.

ENTERPRISE MFG. COMPANY, Philadelphia, Pa.: Large post card relating to the Enterprise Meat and Food Chopper.

F. E. KOHLER & Co., Canton, Ohio: Catalogue illustrating Post Hole Diggers, Hoes, Rakes, Corn Planters, Trowels, Anti-Rattlers, Shovels, Sidewalk Scrapers, Spraying Pumps, &c.

BUTLER BROTHERS, New York: Midwinter catalogue, No. 698, relating to general merchandise, including Hardware and kindred lines, which is sold at wholesale only.

The autumn number of the *Iron Age Farm and Garden News*, lately issued by the Bateman Mfg. Company, Grenloch, N. J., on its first page presents an illustration of the old shop in which the business was established by Stephen Bateman in 1836. In this old building, with its walls of stone, 4½ ft. in thickness, Mr. Bateman with a few workmen turned out Hay and Manure Forks, then the principal article of manufacture, together with some Garden Implements. For sentimental reasons the old building has been spared the destruction usually the fate of such antiquated structures in making room for something more modern, and it still bears a little share in the busy scenes round about, being used partly for storage and for some minor operations by hand and machinery.

McIntyre & McLeod have purchased the Hardware stock of Fisher & McCoy, Schuyler, Neb.

FLORIDA RETAIL HARDWARE ASSOCIATION.

THE Florida Retail Hardware Association, organized about two months since, has made an excellent start and already embraces some of the best known and most representative retail Hardware houses in the State. It is estimated by the able and energetic secretary, W. K. Jackson, that there are something over 100 firms in the State eligible for membership in the association. A fair percentage of these firms are already enrolled, and the prospect is that by the time of the next meeting, to be



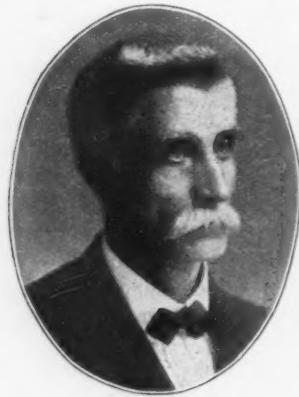
M. E. GRUBER,
President.



B. F. WATTS,
Vice-President.

held in Tampa in February, the membership with which the association was inaugurated will be doubled.

The officers of the association are as follows: M. E. Gruber, who is president of the Lake Worth Mercantile Company, West Palm Beach, and of the Gruber-Morris Hardware Company, Daytona, president; B. F. Watts, Watts Hardware Company, Leesburg, vice-president;



W. K. JACKSON,
Secretary.



DAVID L. THOMAS,
Treasurer.

W. K. Jackson, Jackson & Wilson Company, Lakeland, secretary, and D. L. Thomas, Tampa, treasurer.

The objects and purposes of the association, as proclaimed in the constitution and by-laws, are to

foster and promote a feeling of fellowship and good will among its members, and on broad and equitable lines to advance the welfare of the Hardware trade of Florida; to promote and protect the interests of its members in the various lines of Hardware; to promote mutual confidence with each other; to eliminate and minimize abuses and harmful methods and practices, within the provisions of Federal and State laws relating to trade and commerce, and with the understanding that in the efforts of the association to accomplish the purposes above set forth, no action shall be taken which will in any manner tend to fix or regulate prices.

Any firm or corporation selling Hardware at retail from a regularly maintained stock may become a member of the association, subject to the approval of the Executive Committee. This membership can be terminated at any time by a majority vote of the Executive Committee

if in its judgment it is for the best interests of the association.

The annual dues are \$10, payable in advance. Traveling men, manufacturers and jobbers in Hardware and kindred lines who are in sympathy with the purposes of the association will be accepted as honorary members upon payment of an annual fee of \$5. These honorary members may attend the annual conventions and take part in all open sessions, but will not be entitled to a vote on association questions or policies.

The membership of the association includes the following houses:

Lake Worth Mercantile Co., Nicholson & Co., Clearwater.
West Palm Beach. Bell & Bates, Quincy.
Gruber-Morris Hardware Co., Bond & Bours, Jacksonville.
Daytona. Kennery Hardware Co., Palatka.
Hillsborough Hardware Co., Tampa.
Trimble Hardware Co., Bradenton.
Watts Hardware Co., Leesburg.
W. J. Hill, Sanford.
Lakeland Hardware & Plumbing Co., Lakeland.
Joseph E. Young, Lake City.
Fee & Stewart Co., Fort Pierce.
Bartow Hardware Co., Bartow.
Smedley-Rodgers Co., Jacksonville.
Florida Hardware Co., Jacksonville.
Towers Hardware Co., Jacksonville.
Joseph Bumby, Orlando.
Stanford-Carson-Graves Hardware Co., Kissimmee.
T. P. Carpenter, Bartow.
Suwannee Hardware Co., Live Oak.
Jackson & Wilson Co., Lakeland.
St. Petersburg Hardware Co., St. Petersburg.

Among the associate or honorary members are the following: W. H. G. Scott, Supplee Hardware Company, Philadelphia; G. M. Dickey, Dozier & Gay Paint Company, Jacksonville; G. H. Cantrell, Simmons Hardware Company, St. Louis; R. F. Paddison, Simmons Hardware Company, St. Louis; H. J. Nevins, American Steel & Wire Company, New York; D. A. Reed, J. G. Christopher & Co., Jacksonville; E. H. Norris, Stauffer, Eshelman & Co., New Orleans; Rosser & Fitch, Jacksonville, and O. Leon, E. L. Roberts & Co., Chicago.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM ZELLWEGER & KLAASSEN, Inman, Kan., handling Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Agricultural Implements, Paints, Oils and Sporting Goods. Isaac D. Klaassen recently purchased a half interest in the business of D. E. Zellweger.

FROM S. D. MISNER, who has just engaged in business in Lewis, Kan., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting Goods and Harness.

FROM JAS. P. SUITER, who has purchased the stock of C. F. Graham in Le Claire, Iowa, and will carry on the Stove business in connection with his undertaking establishment.

FROM EGERT BROS' HARDWARE COMPANY, Racine, Wis., which has doubled the capacity of its wholesale and retail store. The company handles Shelf Hardware, Stoves, Tinware, House Furnishings, Paints, Sporting Goods and Cutlery Specialties.

A SOUTH CAROLINA HARDWARE STORE.

THE new brick building of the Union Hardware Company, Union, S. C., is 26 ft. wide and 140 ft. long, with basement, first and second floors. The basement is devoted to Nails, Horseshoes, Wire, Plows, Oils, Putty, Wheelbarrows, Shovels, Field and Garden Tools, Roofing, &c. The first floor, the left hand side of which is shown in Fig. 1, is arranged for a full line of Shelf Goods, Guns, Cutlery, Chains, Crockery, Enamelled Ware, Tinware, Paints, Varnishes, &c. On the second floor are carried Buggies, Buggy and Wagon Material, Rope, Glass, Harness, &c. The shelving on both sides of the store is 12 ft. high and 100 ft. long, all 24 in. deep. The front part of the right hand side is taken up with China, Cut Glass and Glassware, and the Paints, Varnishes, Tinware and Stove Hollowware are toward the back.

As shown in Fig. 1, the left hand side of the store is fitted up for Shelf Hardware, Cutlery, &c. A feature of the front counter is the Horseshoe rack, which is 30 ft. long and 24 in. high. The rack is made of $\frac{1}{2}$ -in. round iron and pine uprights $1 \times 4 \times 24$ in. At each end of the rack is an end piece made of $2 \times 4 \times 24$ in. lumber, with holes bored part way through to keep the rods from slipping either way.

Chain and Belting Racks.

In Fig. 2 are illustrated the Chain and Belting racks, Fig. 3 showing the way the Chain rack is built. The rack is 8 ft. high and 7 ft. 6 in. long. The upper cross

hung are made of $\frac{5}{8}$ -in. rod, 18 in. long, and are driven into $\frac{5}{8}$ -in. holes bored 4 in. apart.

Trace Chains are hung from the upper cross piece, Stay and Breast Chains from the lower cross piece and Grab Chains on the hook at the right hand side of the rack. The platform on which Plow Shapes are carried is



Fig. 1.—A South Carolina Hardware Store.

built of 2×8 in. lumber and is 10 in. high, 10 ft. long and 42 in. wide. The iron rods for keeping the shapes in place are driven into $\frac{1}{2}$ -in. holes, bored through, any distance apart to suit the shapes.

The Belt rack, shown at the end of the Chain rack, extends from the floor to the ceiling. The outside uprights are made of 4×6 in. boards, and the lower portion of the rack is divided from the upper by a 2×6 in. board. Above the board the space is equally divided to accommodate two rollers, one above the other. Slots, $1\frac{1}{4}$ in. across, are cut on the same level in the partitions,

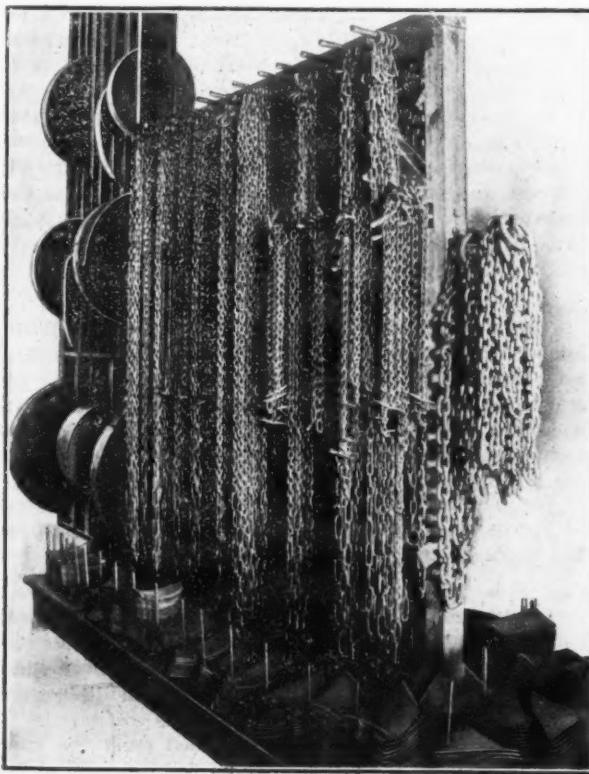


Fig. 2.—Chain and Belt Racks.

piece is 4×6 in. and the uprights, braces and lower cross piece are 4×4 in. The pieces at the bottom of the uprights are 24 in. long, and are fastened to the platform by lag screws. The cross pieces are held in place by $\frac{5}{8} \times 6$ in. lag screws. The pins on which the chains are

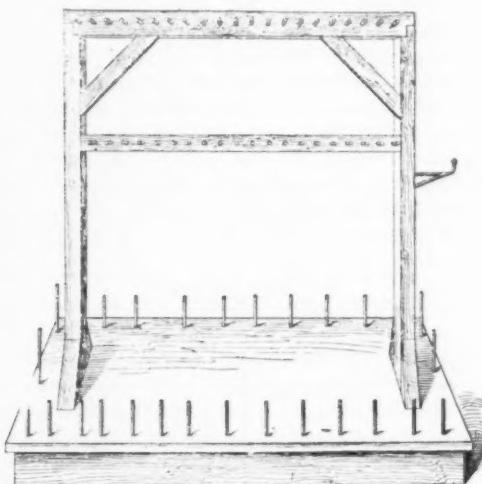


Fig. 3.—Detail of Chain Rack.

slanting downward from front to back, to receive the rollers that the Belting revolves on. The rollers are 3 in. in diameter between the uprights, and the ends are turned down to $1\frac{1}{2}$ in., forming shoulders at each end. The $1\frac{1}{2}$ in. ends of the rollers nearly meet in the center of the partitions. The partitions are spaced far enough apart to accommodate the different widths of Belting carried in stock. The lower section holds Leather Belting 6, 8 and 10 in. wide, and Rubber Belting 6, 8, 10 and 12 in. wide. The upper section holds Belting of both kinds in narrower widths, from 1 in. up.

Here and There in the Hardware Store.

BY SAMUEL MASTERS.

XII.—GETTING THE BUSINESS.

HERE were now five men soliciting trade in the city and its environs, instead of two. Mr. Martin, the city manager, had eliminated from the list of eligibles about 400 firms as not promising to yield enough business to pay for solicitation, reducing to about 1200 the number of firms to be visited. The two oldest men had the smallest lists, and the others had manifestly more than could be covered regularly. Henderson, one of the originals, and the only one who followed the lunch-and-pool-room route to business resisted any attempt to enlarge his field. Grueby, too new to have got his grooves of action worn very deep, was more amenable, and I was able to secure the addition to his list of a number of factories near the people he visited. He and the three new men soon got interested in the record of calls and sales I kept, and the abstracts which were made for Mr. Martin's benefit, and we grew quite friendly. Henderson, however, shunned me, and at every opportunity minimized the importance of the work I was doing.

The City Manager Pleased.

The increase in the number of orders was immediate. The name of Hartman Brothers was a guaranty of good goods and good faith, and the ready response to the salesmen's efforts proved conclusively that the only reason why the firm had not been getting the business was the absence of any effort to get it. Mr. Martin looked through the order books each day, and his gratification was intense, particularly so as he ascribed the growth to the success of his own plans and the efforts of the men whom he had selected. His old plea for a business done at his desk instead of the customer's, was heard no more, although he still personally engineered the large orders and was the sole source of authority for any variation from the regular prices. The ability of the new men to get full prices in nearly every instance was a revelation to him, and a complete refutation of his statement that a personally solicited business meant a reduction of profits.

The Bookkeepers Displeased.

There was one place where the increase in business was not welcomed, and that was at the bookkeepers' desks. It was Hartman Brothers' practice to change the ledgers every two years, and it was a little over a year to the next change when the new business began to appear. There was nothing to serve as a guide as to the space that would be required to carry the accounts to the time for transfer to the new books, and the bookkeepers did some anxious guesswork in this connection. In general they did not believe there would be many entries, and the smaller spaces were usually chosen. Be-

HARTMAN BROTHERS. SALESMAN'S DAILY REPORT OF CALLS AND SALES.	
SALESMAN	10-10 1908
Johns Grueby	Sold
Jones Iron Works	"
Brown & Wilkinson	No sale Nothing wanted
Globe Stone Co.	Sold
Crown Crane Works	Buyer out
Anderson Roller Mill	
Globe Stone Co.	closed credit for files returned see this letter of 8-25
Masters	Please look into this and see me C.M.

Salesman's Daily Report of Calls and Sales.

fore long it was necessary to transfer accounts to new pages, and some accounts were eventually transferred five or six times, causing a large amount of inconvenience in looking up individual items. The city accounts were carried upon three ledgers arranged alphabetically—A to H, I to R, S to Z. The I to R man made the

most complaint, and submitted to Mr. Clark a schedule showing the amount of business on a selected number of small accounts, with the estimated profit and the expense for selling and collecting. He was not encouraged to pursue this line of action and subsided.

Expectations More Than Met.

Of the five city salesmen, four were working in new fields. It was not expected that their sales would be large at the beginning, and the amount of business done was a pleasurable surprise to Hartman, Junior, whose estimate of the time required to reach full efficiency was a year.

"We've not only got to make friends outside, but we've got to train our own men," said he. "They have got a whole lot to learn and they are doing it rapidly, but it will take time."

Procedure Varied to Suit Conditions.

At the close of the day, each man handed to Mr. Martin, the city manager, a report like the one reproduced herewith, which he passed on to me in order that the calls made might be entered upon the customers' record cards. The new salesmen studied these cards and tried to make the record as favorable a one as possible. It was recognized that it was impossible to cover the entire list each month, and that it was not advisable to call upon some of the firms regularly, but we all worked together, upon a common sense basis to get the best results we could. Some of the firms were called upon each week, others once a month, and others once in two or three months, or not at all, when visits could not bring increased orders.

A Friend Displeased.

Grueby, for instance, made one call at a foundry upon his list, the German owner of which had been a regular unsolicited customer. This man was incensed at the attention. He had been a warm, personal friend of old Peter Hartman, and had given the sons, from a sentimental regard for the house, the trade he had originally begun with their father. He had felt proud of the long continued relations, and was hurt at the lack of recognition of the friendly feeling which Grueby's call seemed to imply. When Grueby made his report, Hartman Senior was told of the matter and at once made a personal call upon his father's old friend, with the explanation that additional salesmen were being sent out to see that old friends were receiving proper treatment as well as to make new ones, and mollified the old gentleman. Grueby made one subsequent call, under Senior's instructions to convey the impression of an appreciative friendly interest, and was cordially received. The name was then transferred to Kelly's list, as Kelly and he lived in the same neighborhood and it was easy to keep in touch with this customer through accidental meetings.

The Personal Fall Encountered.

There was another concern, a large planing mill and lumber firm, that had bought little or nothing from Hartman Brothers. Williams called upon their manager several times, without receiving a satisfactory audience, and was then told not to call again. The head of another Ironville Hardware house telephoned Mr. Martin, asking him to call off his salesman, as he and the manager of the planing mill were brothers-in-law, and it would be impossible for Hartman Brothers to get the business. His request was promptly granted.

Concessions Made.

In several instances, it was found that the credit manager's interest charges upon overdue accounts had terminated the business. This was a matter over which Mr. Martin and Mr. Clark had had heated discussions, and Mr. Clark was not inclined to make concessions. I found, however, that when approached from the viewpoint of waiving a legitimate claim for the sake of policy, Mr. Clark was very reasonable, and his credit slips, sent with a friendly letter to each of the concerns, not only withdrew the cause of the offense, but the irritation as well.

Retributive Justice.

There was some trade we could not gain—the planing mill mentioned, and three other firms would not buy

from Hartman Brothers. One was a flour mill—the largest in the State—which had been deliberately driven away by Hartman Brothers' clerks. This firm's purchases were made upon pass book, by the millers, who were in the habit of calling at the store early in the morning. The clerks would sometimes find the mill buyer at the door before it was opened. The "early" clerks, who cared for this particular account wanted the first few minutes of the day to themselves, and by studied incivility and intentional lack of attention drove the business away. The account had run from \$700 to \$800 per year at regular prices, and it was thought worth an effort to get it back. After several calls, Williams reported that he could not make any headway—that the head miller was angry and positively refused to reopen the account. The name was placed upon Grueby's list, and later given to Morgan and then to Kelly, but each reported inability to make any impression, and the matter was dropped.

Personal Animosities Interfere.

In another instance Hartman, Senior, had trouble with the president of a local traction company over a line fence, and a once valued account was lost beyond recall. Morgan reported that he was having a pleasant visit with the purchasing agent when the president entered, and stated with much violence that the company would not give a dollar's worth of business to Hartman Brothers while Senior lived. The matter was reported to Senior, who at once gave peremptory orders not to call there again.

A Wrangle Spoils Trade.

In the fourth case, an Ironville Stove dealer and manufacturer had purchased a Range, but later returned it, saying the woman for whom it was ordered had decided not to buy. Mr. Martin claimed to have been privately advised that the Range had been ordered for the purpose of making measurements for drawings and then returned to Hartman Brothers. This the Stove man indignantly denied, and refused to buy any more goods until Mr. Martin made a retraction and apology, which he positively declined to do.

The Results Attained.

Now please note the following statements carefully:

With the exception of the four concerns mentioned we brought onto the books within a year and a half every firm from whom we personally solicited business. In some instances we lost the accounts later, in others we only received a small part of the business, but in the major number of cases we did a profitable and regular trade.

We accomplished this result first, by making a complete list of the people we wanted to sell—and then going after them.

If one salesman failed, another tried. Occasionally the Hartmans were brought into service when their personal influence would turn the scale.

Some hard and fast rules were broken when necessary, and special concessions made to heal old sores.

We got the orders, and at the end of the period named Hartman Brothers had, we were sure, more of the local supply trade than all the other houses combined.

When the profits were figured, at the end of the year, it was the city business that made a dividend possible, the wholesale department barely paying its own expenses.

THE HUMPHRIES MFG. COMPANY, Mansfield, Ohio, is prepared to enamel on order, either by the wet or dry process, special work in iron or steel. The company solicits orders from manufacturers and builders of machinery who find it desirable and often necessary to finish their products, or parts of them, with a fine, clear white sanitary enameled finish. Estimates will be furnished promptly on request.

THE active management of the Clark-Rutka-Weaver Company, Grand Rapids, Mich., is now in the hands of W. D. Weaver, secretary and treasurer, J. J. Rutka having retired from the company.

THE IRON AGE

CATALOGUE HOUSES SOLICITING BUSINESS FROM DISTANT MANUFACTURERS.

THE enterprise of the catalogue houses in soliciting business in new fields may well be emulated by other classes of retail merchants. The following letter from a well-known Western mail order concern was recently received by a manufacturer in the East, not connected with the Hardware business:

We are receiving so many orders daily from factories all over the country (very few of which sell us any of their product), that it has occurred to us, why not solicit business from manufacturers such as your good selves for any goods which you may want for your factory.

In a great many cases it would be an advantage to you to simply drop us a line when you need an article of Office Furniture, a Clock for the factory or office, a Wagon, or Buggy, Tools, Office Supplies, Plumbing Supplies, Hardware of all kinds which might be required, house or barn Paint, a Safe, Scales, a Stove, Telephones to connect various departments, Belting and Mill Supplies, a Lamp or Lantern, Toilet Paper, Harness, Rubber Hose, Roofing and hundreds of other articles which are used in and about a factory.

We would be glad to fill any order for goods which you might select from our catalogue, to be paid for at the end of the month.

The members of your family might like to order goods to be charged to your account, and we would be glad to have them do so.

A number of factories with whom we do business encourage their employees to order goods from us, and we would be pleased to send such goods on your order, to be paid for at the end of the month.

While it would not make the slightest difference in our relations with you whether or not you ordered goods from us, we would nevertheless appreciate whatever business would come our way.

It is probably unnecessary to state that any goods ordered either for the factory or for personal use would be sent with the distinct understanding that they may be returned to us at our expense of transportation both ways if for any reason whatever the goods are not entirely satisfactory. We would be glad to send you a catalogue if you have none at hand.

Adolph Kastor & Bros.

UNDER the style of A. K. A. B. R. O. Social Circle, the employees of Adolph Kastor & Bros., 109 Duane street, New York, have organized an association, the object of which is to promote fraternity among the members. The membership numbers 22, including both male and female employees of the firm. The first annual dinner was held at Mouquin's December 26, and was a very enjoyable occasion. The guests of the evening were: Adolph Kastor, Sigmund Kastor and Gus Kastor, who were elected honorary members of the association. The officers of the organization are H. K. Zust, president; E. M. Netter, vice-president; Thomas P. Thompson, treasurer, and Miss S. A. Hirschberg, secretary. Paperweights in the form of a four-leaf clover, which is the trademark of the firm's best goods, were distributed as souvenirs. Addresses were made by the Messrs. Kastor and the officers of the new formed association.

THE BATEMAN MFG. COMPANY, Grenloch, N. J., has recently purchased the patterns, stock and good will of the Patten & Stafford Company, which formerly made the New York Champion Wood Hay Rake. The Rake is alluded to as having been popular throughout New England, New York State, portions of Pennsylvania, Maryland, New Jersey and Delaware, and the original manufacturers also had quite a large export trade.

G. N. JACOBI, who has been connected with the Reading Hardware Company, Reading, Pa., for the past 21 years, has tendered his resignation. He has served the company efficiently as assistant treasurer, treasurer and general manager.

T. R. Hatton, Mount Vernon, Wash., general Hardware, Farm Implements and Machinery, will be succeeded on January 1 by the Hayton-Peck Hardware Company, newly incorporated with a capital of \$30,000.

The Grip Nut.

The grip nut illustrated in Figs. 1 and 2 is made by the Grip Nut Company, 1590 Old Colony Building, Chicago, and 500 Fifth avenue, New York. It is made from special steel of high tensile strength, and is tapped

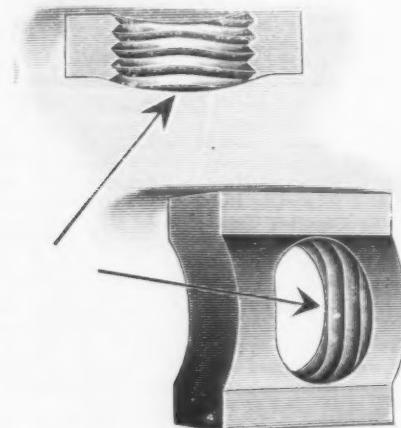


Fig. 1.—The Grip Nut, Treatment of Threads.

through the arch shaped section with United States standard threads, such as are used on ordinary bolts. It owes its distinctive feature to the subsequent treatment of the threads, by which, it is claimed, a tenacious gripping power is imparted. This is accomplished by subjecting the crown of the arch to pressure after the nut is threaded, which alters the pitch of the threads by giving them a slight downward curve on the arched sides.

The effect of this treatment is shown in Fig. 1, where the deflection of the threads is exaggerated in order to bring out more clearly the principle involved. The nut is applied by starting it with the hollow side or face toward the first nut or bearing, and it is recommended that in setting it up it should not be wrenched so tight as to spring or flatten the set of the curve. Owing to the grip afforded by the deflected threads it does not depend for the tightness of its hold upon being jammed up against the inner nut or bearing; in other words, it is designed to lock itself upon its eccentric threads and to hold permanently and securely at any point on the bolt to which it may be threaded. It is stated that notwithstanding this slight eccentricity given the threads the bolt is not injured. The nuts may be removed with a wrench and used again repeatedly. They are made in all sizes, both hexagon and square.

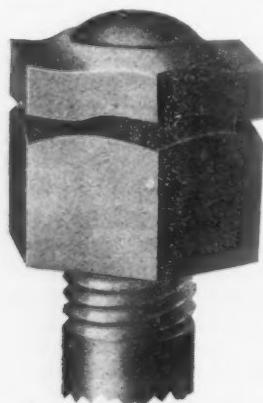
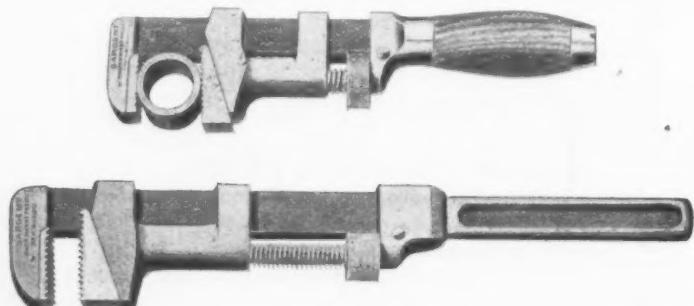


Fig. 2.—Grip Nut on Bolt.

to cause the sliding jaw to ride up on the incline, that is to say toward the bar, the wrench tightens on the work, thus combining the force of lever and wedge, the harder the pull the firmer the grip. Turning the wrench in the opposite direction loosens the jaws, the wedge riding down the incline. The effect is similar to a ratchet motion. It is explained that the wrench can be set so that it will not crush thin pipe. The jaws are of hardened tool steel and are easily replaceable. The bar sleeve and screw



The Brosnihan Pipe Wrench with Wood or Steel Handle.

are case hardened. The wrench is made in two styles, polished and dark finished, and in three sizes, 8, 12 and 18 in., the two smaller sizes having wooden handles, Fig. 1, and the 18 in. an iron handle, Fig. 2.

Factory Pans with Handles.

Among recent additions to the product of the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, is a line of factory pans, two of which are here illustrated. The pan shown in Fig. 1 is smooth inside, with no seams or rivets, and is suitable for handling or storing parts of electrical instruments, clocks, watches and parts of ma-



Fig. 1.—Pan with Flat Steel Handles.

achinery. It is pressed from No. 16 gauge steel, but can be made of heavier or lighter steel if desired. It is 13½ in. wide, 21½ in. long, 5¾ in. deep, weighs 9 lb., and is furnished plain, painted or galvanized. The pan shown in Fig. 2 has a heavy rolled flange and rolled steel handles, and is designed not to buckle in use. It is referred to as being very strong, and is especially adapted to

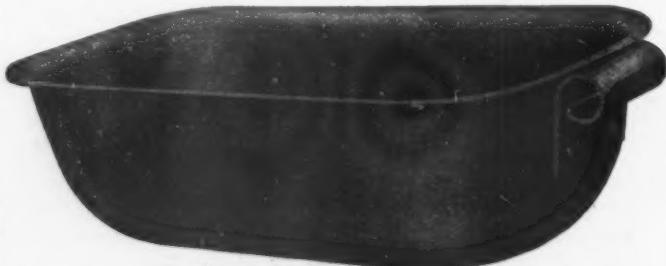


Fig. 2.—Heavy Pan with Rolled Steel Handles.

handling castings, ore, quartz, bolts, rivets, nails, screws, washers, parts of machines and for all other purposes for which tote boxes are used. The pan is pressed from No. 16 gauge steel, but can be made heavier or lighter as desired. It is made in two sizes, as follows: I, 11 in. wide, 16 in. long, 5½ in. deep, weight, 7½ lb.; J, 8¾ in. wide, 16½ in. long, 5¾ in. deep, weight, 6 lb.

The Brosnihan Pipe Wrench.

The Brosnihan Wrench Company, 31 Hermon street, Worcester, Mass., is putting on the market a new pipe wrench, embodying interesting mechanical features. As seen in the illustration the tool resembles the standard screw wrench in appearance, and possesses the same advantage of being adjusted and operated by one hand, leaving the other free to hold and guide the pipe. The sleeve jaw is cut away on an angle, and is T-slotted to take the sliding jaw. The angle of the sleeve jaw being the same as that of the sliding jaw, the working jaw surfaces always maintain the same angular relation one to the other. The sliding jaw is held toward the bar by a spring. The result is that when the wrench is turned in the direction

Palmer's 1909 Hammocks.

The accompanying illustrations show new hammocks manufactured by the I. E. Palmer Company, Middletown, Conn. The swinging couch hammock shown in Fig. 1 is suspended from the company's special couch support,

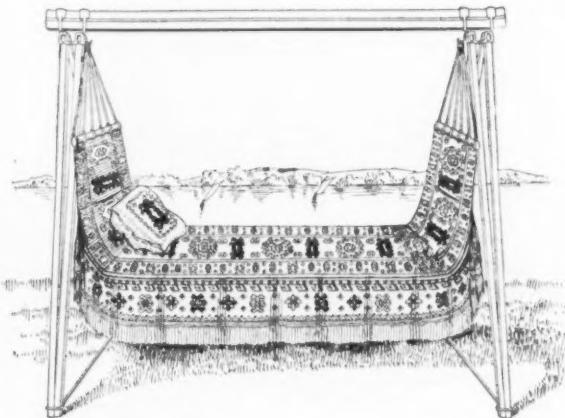


Fig. 1.—Utopia Couch Hammock on Special Support.

which can be supplied with an awning. In Fig. 2 the same kind of a hammock is hung from a veranda ceiling by ceiling plates specially constructed to afford a noiseless antifriction movement. The hammock may also be suspended from trees. It comprises a bed frame, 28 x

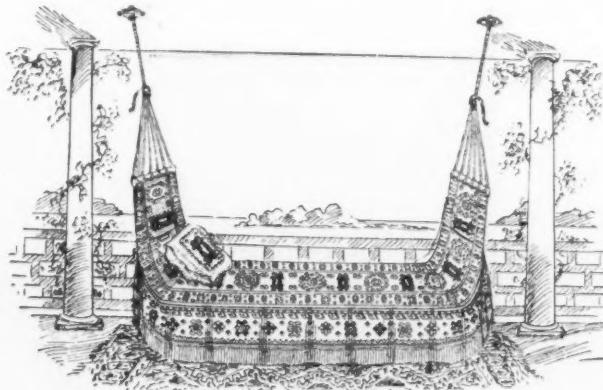


Fig. 2.—Utopia Couch Hammock on Veranda.

72 in. in size, strongly made from well seasoned rock maple. To the frame is attached a helical spring and wire mattress, or bed support, of modern construction, calculated to supply the maximum amount of ease and durability. Upon this is placed a thick cotton quilt wadding, giving, it is shown, in connection with the spring an easy bed, over which is stretched the fabric of the ham-

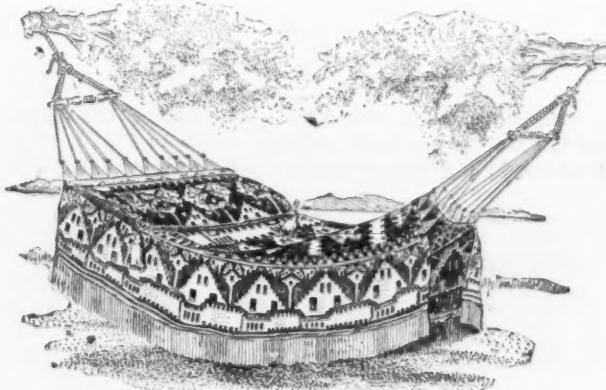


Fig. 3.—Palmer Hammock, Model Town Design.

mock body. The bed frame is easily removed and can be reversed if it springs or warps. The hammock is supplied with valances, concealed spreaders and adjustable hitch end rings, and is furnished in two styles of weave in colors. Wind shields for attachment to one side of the

hammock are supplied where requested, as are also adjustable back rests, converting the hammock into a swinging settee. Pockets at each end for the reception of magazines and papers are also supplied only when requested. One of the company's regular line of hammocks is illustrated in Fig. 3. It is explained that the naïve treatment of this "Model Town" design is on the order of Swedish hand woven work of 100 years ago, which is now being revived by order of the Queen of Sweden. This hammock is made in two colors.

The Utica Lawn Trimmer.

The Utica Lawn Trimmer Company, 15 Post street, Utica, N. Y., is offering the lawn trimmer shown herewith. The handle is 36 in. long, and the slot in the top of the frame permits the handle to be adjusted by loosening the nut to suit the height of the operator. The outer



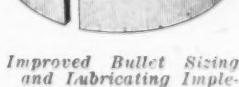
Utica Lawn Trimmer.

end of the head of the trimmer is provided with a thin steel ring, which serves as a protector to the end of the knives and permits close trimming. Special attention has been given to the quality of the steel used in the knives. The trimmer weighs 11½ lb.

Improved Bullet Sizing and Lubricating Implement.

The Ideal Mfg. Company, New Haven, Conn., is now prepared to furnish its new improved tool for sizing and lubricating cast bullets. The improvement pertains mainly to the grease pressure nut, shown herewith, which is provided with a wide metal spring band. When the slot

is closed this will fit tightly inside of the tube which contains the lubrication. There is a hole on each opposite side of the band that goes over projecting pins on opposite side of the nut; thus the spring band and nut are fastened together. When the nut and spring band are forced in the tube, that is filled with grease, the lubrication forces the wide band snugly against the inside of the tube. By this friction the nut is prevented from turning with the screw when the pressure is applied. The grease on the inside is also prevented from escaping past the nut, which heretofore has caused trouble and some dissatisfaction. With the implement as now constructed, the work may be done in the parlor, if desired, without fear of soiling the hands. The new



pressure nuts will work in the old machines, that are now out on the market without any change, excepting the old original machines, that have the feather on the inside of the grease tube. In that case a new grease tube, as well as improved pressure nut, will be required to bring the machine up to date. In ordering it should be stated whether the nuts are wanted for the No. 1 or No. 2 lubricator.

The Fixed Compass Plate.

The Brass Shop, 806 Empire Building, Pittsburgh, Pa., is offering the fixed compass plate here shown. It is a highly polished, flat, brass or bronze fixed plate, which permanently indicates the points of the compass, and is made in two sizes, one for the floor and the other for the window sill. The edge of the compass is beveled



The Fixed Compass Plate.

so that the plate lies perfectly flat. The compass is designed to satisfy the curiosity of guests at country and seaside houses, golf and country clubs, hotels, &c., who immediately wish to know the points of the compass. The direction marks are deeply cut and the plate is referred to as being decidedly unique and ornamental.

The Vollrath Roasters.

To the line of Vollrath ware made by the Jacob J. Vollrath Mfg. Company, Sheboygan, Wis., has been recently added a two-part round roaster, here illustrated. The bottom pan has a corrugated and raised bottom to keep the fowl or roast from the extreme heat of the



Fig. 1.—The Vollrath Two-Part Roaster.

stove and so avoid burning. Particular attention is called to the dimensions of the roaster, which are 7½ in. in height by 14¼ in. in diameter. It will be recognized that the height is such as to permit its use in the smaller stoves without removing the oven shelf. The double roaster has three parts, Fig. 2, and is self-basting with a center drip, and the inner dish is so constructed as to guard

against burning the roast. It has no grooves or buttons to make it unsanitary or hard to clean. The roasters

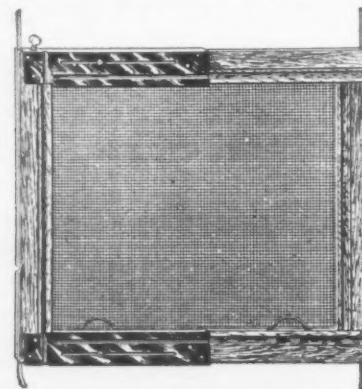


Fig. 2.—The Vollrath Double Roaster.

are furnished in special blue, white and white majestic and gray enamels, corresponding to those used upon the other ware made by the company.

Worthington Adjustable Lift Screen.

The Worthington Roller Screen Company, Baltimore, Md., has just brought out the adjustable lift screen illustrated herewith. Its features include metal tongues or slides, calculated to overcome the difficulties of swelling, blinding and sticking, sometimes experienced with wooden tongues, and being at the same time, it is said, neater and stronger. There is a spring solid in the tongue to hold the screen up, which the company states will not get out of order. The construction is such that new



Worthington Improved Adjustable Lift Screen.

cloth can easily be fitted in at trifling cost. The screens are made of highly finished hard wood, golden oak or mahogany finish. The cloth with which they are filled is described as of a specially treated linen mesh, waterproof, rustless, and not affected by salt air or sulphur. Stock widths offered are 22, 28, 34 and 40 in., each having a 6-in. adjustment and opening to 28, 34, 40 and 46 in., respectively. Three heights are offered—26, 31 or 36 in. Quotations on other than stock sizes will be gladly furnished by the company.

The Royal Knife Polisher.

The Royal Mfg. Company, Lancaster, Pa., has placed on the market the knife polisher shown in Fig. 1. The knobs hold a piece of cork, which is reversible. The

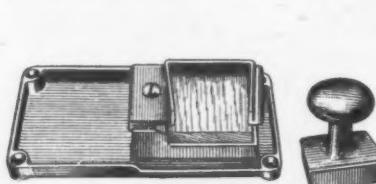


Fig. 1.—The Royal Knife Polisher.

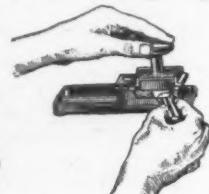


Fig. 2.—Manner of Using Polisher.

knife, on the opposite side, slides along a hard piece of wood. The attached receptacle is for holding sand for scouring and polishing. Fig. 2 represents the manner in which knives are polished, by rubbing them back and forth between the cork and the wood.

The Mossberg Diamond Razor Blade Stropper

The razor blade stropper shown in the accompanying illustrations, put on the market by Frank Mossberg Company, Attleboro, Mass., is designed primarily for Gillette safety razor blades. The stropper shown in Fig. 1, with a blade in place, is $6\frac{1}{2}$ in. long, being long enough to give a firm, easy grip, thus avoiding likelihood of slipping, turning in the hand or causing the operator to cut his hand or the strop. Inserting the blade, Fig. 2, is



Fig. 1.—The Mossberg Diamond Razor Blade Stropper.

simple and easy, and can be done without danger of injury to the hand. It is accomplished by drawing back the button with the right thumb, allowing the jaws of the stropper to open to admit the blade. Holding the blade at the end, between the left thumb and finger, it is inserted between the jaws, bringing the two outside holes in the blade over the studs in the lower jaw of the

stropper. The jaws are then pinched together so that the studs engage the blade, at the same time thrusting the button forward in the slot with the right thumb as far as it will go. Thus the blade is held in a viselike

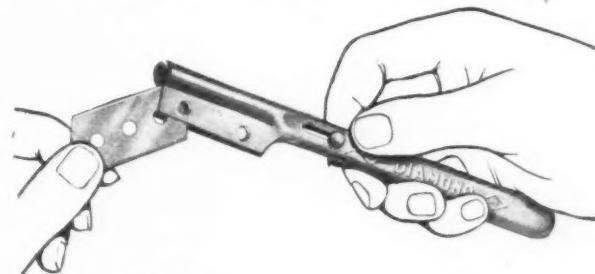


Fig. 2.—Putting the Blade in the Stropper.

grip, ready for stropping. The stropper will make an edge for every shave, preventing a blade from gradually growing dull through use from day to day until a new blade becomes a necessity. The stroppers are packed one in a box, one dozen boxes in a container, or carton, to be displayed on the merchant's showcase or counter.

PAINTS, OILS AND COLORS**Animal, Fish and Vegetable Oils**

	gal.
Linseed, Western, Raw.	.46 @47
State, Raw.	.46 @47
City, Raw.	.47 @48
Boned, 1 $\frac{1}{2}$ gal, advance of Raw.	.46 @48
Lard, Prime, Winter.	.70 @77
Extra No. 1.	.73 @52
No. 1.	.46 @48
Cotton-seed, Crude, f.o.b. mill.	.29@.33
Summer Yellow, prime.	.38@.38
Summer, White.	.38 @12
Yellow, Winter.	.8 @50
Tallow, Acidless.	.58 @59
Menhaden, Brown, Strained.	.34 @35
Northern Crude.	.07
Southern.	.24@.25
Light Strained.	.34 @35
Bleached, Winter.	.36 @38
Ex. Bleached, Winter.	.38 @39
Coconut, Ceylon.	.70 @74
Cochin.	.70 @74 @ 7%
Cod, Domestic, Prime.	.38 @40
Newfoundland.	.40 @42
Red Elaine.	.41 @43
Saponified.	.38 @61@.64
Olive, Yellow.	.81 @50@.85
Neatsfoot, Prime.	.55 @112
Palm, Lagos.	.70 @6 @ 6%

Mineral Oils

	gal.
Black, 29 gravity, 25@30 cold test.	.13 @13@.20
29 gravity, 15 cold test.	.13@.14
Summer.	.12@.13
Cylinder, light, filtered.	.20@.21
Dark, filtered.	.18 @19
Paraffine, 903-907 sp. gravity.	.14@.15
903 sp. gravity.	.13@.14
983 sp. gravity.	.11 @112
Red.	.13@.14

Miscellaneous

Barrels:	
White, Foreign.	.39 ton \$18.50@20.50
Amer. floated.	.39 ton 17.00@18.00
Off color.	.39 ton 12.50@15.00
Chalk, in bulk.	.39 ton 3.00@3.10

Spirits Turpentine

	gal.
In Oil bbls.	.41 @41%
In machine bbls.	.41@.42
Glue	lb
Cabinet.	.12 @15
Common Bone.	.74@.9
Extra White.	.18 @24
Fish, liquid, 50 gal. bbls., per gallon.	.60 @1.20
Foot Stock, White.	.12 @14
Foot Stock, Brown.	.9 @11
German Common Hide.	.10 @12
German Hide.	.12 @18
French.	.10 @40
Irish.	.13 @16
Low Grade.	.10 @12
Medium White.	.14 @17

Gum Shellac

	lb
Bleached, Commercial.	.21 @22
Bone Dry.	.25 @26
Button.	.30 @40
Diamond L.	.30 @39
Fine, Orange.	.30 @35
A. C. Garnet.	.22@.23
G. A. L.	.20 @21
Kala Button.	.15@.16
D. C.	.41 @41
Octagon B.	.31 @32
T. N.	.20@.21
V. S. O.	.03@.05

Colors in Oil

	lb
Black, Lampblack.	.12 @14
Blue, Chinese.	.36 @16
Blue, Prussian.	.32 @36

	lb
Blue, Ultramarine.	.13 @16
Brown, Vandyke.	.11 @14
Green, Chrome.	.12 @16
Green, Paris.	.02@.24
Sienna, Raw.	.12 @15
Sienna, Burnt.	.12 @15
Umber, Raw.	.11 @14
Umber, Burnt.	.11 @14

White and Red, Lead &c.

	lb
Lead, English white, in Oil, 10%@10%	
American White:	
Dry and in Oil, 100, 250 and 500 lb kegs.	6%
Dry and in Oil, 25 and 50 lb kegs.	7
Dry and in Oil, 12 $\frac{1}{2}$ lb kegs.	7 $\frac{1}{4}$
In Oil, 25 lb tin pails.	7 $\frac{1}{4}$
In Oil, 12 $\frac{1}{2}$ lb tin pails.	7 $\frac{1}{2}$
In Oil, 1, 2, 3 and 5 lb tin cans, ass't.	8%
Red Lead and Litharge:	
In 100 lb kegs.	7
In 25 and 50 lb kegs.	7 $\frac{1}{4}$
In 12 $\frac{1}{2}$ lb kegs.	7 $\frac{1}{2}$
In lots of less than 500 lbs.	
1 $\frac{1}{2}$ lb advance over above prices of White and Red Lead and Litharge.	
Lead, American: Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.	

Zinc, Dry

	lb
American, dry.	5 $\frac{1}{4}$ @ 5%
Red Seal (French process).	6 $\frac{1}{4}$ @ 7
Green Seal.	7 $\frac{1}{4}$ @ 7 $\frac{1}{2}$
German Red Seal (French process).	7 @7 $\frac{1}{4}$
Green Seal.	7 $\frac{1}{2}$ @ 7 $\frac{1}{2}$
White Seal.	8 $\frac{1}{4}$ @ 9
French, Red Seal.	8 $\frac{1}{4}$ @ 8 $\frac{1}{2}$
Green Seal.	10 $\frac{1}{2}$ @10%

Dry Colors

	lb
Black, Carbon.	.64@10
Black Drop, American.	.34@8

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33½ @ 33½ & 10% signifies

that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—“The Iron Age Standard Hardware Lists” contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—	Awl and Tool Sets— See <i>Sets, Awl and Tool.</i>
Columbian and Domestic.....	33½%
North's.....	10%
Upson's Patent, \$1 gro., 29.90.....	10%
Zimmerman's—See Fasteners, Blind.	
Window Stop—	
Ives' Patent.....	10%
Ives' Stop Bead Screws and Washers.....	10%
Taplin's Perfection.....	10%
Ammunition— See <i>Caps, Cartridges, Shells, &c.</i>	
Anti-Rattlers—	
Fernald Mfg. Co. Burton Anti-Rattlers, \$1 doz. pairs, Nos. 1, \$9.75; 2, \$10.00; 4, \$11.00; 5, \$11.50; 6, \$12.00; 8, \$13.00; 10, \$14.00; 12, \$15.00; 14, \$16.00; 16, \$17.00; 18, \$18.00; 20, \$19.00; 22, \$20.00@\$3.00	
Anvils—American—	
Elgin Anvils.....	lb. @ 88¢
Hay-Budden, Wrought.....	9½@9½¢
Trenton.....	lb. 9½@9½¢
Imported—	
Swedish Solid Steel Paragon, \$1 lb. 10¢@10½¢	
Swedish Solid Steel Sisco, Superior, \$1 lb. 10¢@10½¢	
Peter Wright & Sons, \$1 lb. 84 to 34¢ lb. 11¢; 35¢ to 600 lb. 11½¢.	
Anvil, Vice and Drill—	
Millers Falls Co. \$18.00.....	15&10%
Apple Parers— See <i>Parers, Apple, &c.</i>	
Aprons, Blacksmiths'—	
Livingston Nail Co.	10%
Augers and Bits—	
Com. Double Spur....	@ 80&10%
Jennings' Patn., Bright 63¢@10¢@70%	
Black Lip or Blud....	65@65¢@70%
Boring Mach. Augers....	70%
Car Bits, 12-in. twist....	40@10%
Ford's Auger and Car Bits....	40&5%
Ft. Washington Auger Co., Card's.....	35%
Forstner Pat. Auger Bits....	25%
C. E. Jennings & Co.: No. 10 ext. lip, R. Jennings' list, 25&7½%; No. 30, R. Jennings' list, 50%; Russell Jennings' list, 25½@10½%; L'Hommedieu Car Bits, 15%; Mayhew's Comtersink Bits, 45%; Pugh's Black..., 20%; Pugh's Jennings' Pattern, 35%; Snell's Auger Bits, 60%; Snell's Bell Hangers' Bits, 60%; Snell's Car Bits, 12-in. twist, 60%; Snell's King Auger Bits, 50%; Swan's.....	65&10@70%
Swan's, Jennings' Pattern, 50%; Swan's Jennings' Bits, 50%; Wright's Jennings' Bits, 50%;	
Bit Stock Drills—	
See <i>Drills, Twist.</i>	
Expansive Bits—	
Clark's Pattern, No. 1, \$1 doz., \$26%; No. 2, \$18%; Ford's, Clark's Pattern, 60¢@60¢@10%; C. E. Jennings & Co., Steer's Pat., 25%; Lavigne Pat., small size, \$18.00; large size, \$26.00; Swan's.....	60&10%
Gimlet Bits—	
Per gro. Common Dbl. Cut....	\$3.00@3.25
German Pattern, Nos. I to 10, \$4.75; II to 13, \$5.75	
Hollow Augers—	
Bonney Pat., per doz.	\$5.50@6.00
Ames.....	20&10%
Universal.....	20%
Ship Augers and Bits—	
Ship Augers.....	40&10@—%
Ford's, Clark's Pattern, 33½&5%	
C. E. Jennings & Co.: L'Hommedieu's, 6%; Watrous'.....	33½&7½%
Snell's.....	48%
Awl Hafts— See <i>Handles, Mechanics' Tool.</i>	
Awls—	
Brod Awls: Handled.....	gro. \$2.75@8.00
Unhandled, Shldered.....	gro. 63¢@66¢
Unhandled, Patent.....	gro. 66@70¢
Peg Awls: Unhandled, Patent..	gro. 31@34¢
Unhandled, Shldered..	gro. 65@70¢
Scratch Awls: Handled, Com... gro. \$3.50@4.00	
Handled, Rocket....	gro. \$11.50@12.00
Elmorc Tool Mfg. Co.: Tinner's and Brad Awls, 55&7%	
Scratch Awls.....	60%
Hand—	
Blacksmith, Standard List: Split Leather.....	60@610@65%
Grain Leather.....	50@50@10%
Hand—	
Inch.....	6 7 8 9 10
Doz.	5.50 6.00 6.50 7.50
Molders—	
Inch.....	10 12 13 16
Doz.	7.50 9.00 12.00 15.00
Bells—	
Cow—	
Wrought Cow Bells.....	75%
Jersey.....	75&10%
Texas Star.....	50%
Door—	
Home, R. & E. Mfg. Co.'s.....	55&10%
Hand—	
Polished, Brass.....	60@60@10%
White Metal.....	60@60@10%
Nickel Plated.....	50@10%
Swiss Globe Hand Bells.....	50@10%
Lag Screw.....	66½%
Miscellaneous—	
Farm Bells.....	lb. 2½@2½¢
Church and School.....	60@60@10%
Plow and Stove—	
Plow.....	65@5@70%
Stove.....	85@85@5%
Leather—	
First Quality, Ex. Hy., Strictly	
Short Lap.....	60@19½%
Standard.....	70@10@70@10@5%
Light Double.....	70@10%
Cut Leather Lacing.....	45@50%
Leather Lacing Sides, per sq. ft. 25¢	
Rubber—	
Competition (Low Grade),	
70@10@75%	
Standard.....	60@60@70%
Best Grades.....	40@50%
Bench Stops—	
See <i>Stops, Bench</i>	
Benders and Upsetters—	
Tire—	
Green River Tire Benders and Upsetters.....	20%
Bicycle Goods—	
John S. Leng's Son & Co.'s 1908 list:	
Chain, Parts, Spokes.....	50%
Tubes.....	60%
Bits—	
Auger, Gimlet, Bit Stock Drills, &c.—See <i>Augers and Bits.</i>	
Blocks—	
Tackle—	
Common Wooden.....	70@75@65%
B. & L. B. Co.: Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%; Lane's Patent Automatic Lock and Junior.....	30%
See also <i>Machines, Hoisting.</i>	
Boards, Stove—	
Paper and Wood Lined.....	55%
Embossed.....	55%
Boards, Wash—	
See <i>Washboards.</i>	
Bobs, Plum—	
Keufel & Esser Co.	33½&10%
Bolts—	
Carriage, Machine, &c.—	
Common Carriage (cut thread):	
3 x 6 and smaller.....	75@65%
Larger and longer.....	70@65%
Common Carriage (rolled thread):	
3 x 6, smaller and shorter,	75@65%
Lane's Patent Automatic Lock and Junior.....	30%
See also <i>Machines, Hoisting.</i>	
Boards, Stove—	
Paper and Wood Lined.....	55%
Embossed.....	55%
Boards, Wash—	
See <i>Washboards.</i>	
Bobs, Plum—	
Keufel & Esser Co.	33½&10%
Bolts—	
Carriage, Machine, &c.—	
Common Carriage (cut thread):	
3 x 6 and smaller.....	75@65%
Larger and longer.....	70@65%
Common Carriage (rolled thread):	
3 x 6, smaller and shorter,	75@65%
Phila. Eagle, \$3.00 list, 80@—%	
Bolt Ends, with C. & T. Nuts.....	70@10%
Machine (Cut Thread):	
3 x 4 and smaller.....	75@65%
Larger and longer.....	70@65%
Door and Shutter—	
Cast Iron Barrel, Japanned, Round Brass Knobs:	
Inch.....	3 4 5 6 8
Per doz.	30 35 45 .60 .80
Cast Iron Spring Foot, Jap'd.:	
Inch.....	6 8 10
Per doz.	12.20 1.50 2.25
Cast Iron Chain, Flat, Japanned:	
Inch.....	6 8 10
Per doz.	1.00 1.40 1.65
Cast Iron Flat Shutter, Jap'd., Brass Knobs:	
Inch.....	6 8 10
Per doz.	80.75 .95 1.25
Wrought Barrel Japanned, 80@10@80@10@65%	
Barei Bronzed.....	60@10@
Spring.....	70@10@70@10@
Shutter.....	50@50@50@10@5%
Square Neck.....	75@75@10@
Square.....	70@10@10@10@
Ives' Mortise.....	10%
Ives' Wrought Metal.....	10%
Expansion—	
E. H. Evans' Crescent.....	40@60%
Richards Mfg. Co.: 102, Tin'd., \$1.65;	
Star Expansion Bolt Co.: 102, Tin'd., \$1.65;	
Star Expansion Bolt Co.: 102, Tin'd., \$1.65;	
Star Lag Screw Type, 60@10@5&10@	
Star, Wood Screw Type, 40@	
Star, Machine, Single Wedge, 60@	
Bull Rings— See <i>Rings, Bull.</i>	
Butts—	
Brass—	
Wrought Steel.....	75@10@5@70@
Bradley Metal Clasp, 50@10@10@60@10@	
Griffin's Pressed Steel.....	75@75@10@
Griffin's Folding Brackets.....	70@10@
Taplin Victor Handy Egg Beater Bracket.....	10@ doz. \$1.50
Braces—	
Common Ball, American.....	\$1.50
Barber's.....	50@10@10@60@10@
Fray's Genuine Spofford's.....	60@
Fray's No. 61, 166, 206, 614.....	50@
C. E. Jennings & Co.	50@5@
Perfection.....	10@
Seavey.....	15@
Braces—	
Common Ball, American.....	\$1.50
Barber's.....	50@10@10@60@10@
Fray's Genuine Spofford's.....	60@
Fray's No. 61, 166, 206, 614.....	50@
C. E. Jennings & Co.	50@5@
Mayhew's Ratchet.....	60@
Mayhew's Quick Action Hay Pat.	50@
Millers Falls Drill Braces.....	25@10@
P. S. & W. Co., Peck's Pat.	60@10@
Brackets—	
Wrought Steel.....	75@10@5@70@
Bradley Metal Clasp, 50@10@10@60@10@	
Griffin's Pressed Steel.....	75@75@10@
Griffin's Folding Brackets.....	70@10@
Taplin Victor Handy Egg Beater Bracket.....	10@ doz. \$1.50
Bright Wire Goods—	
See <i>Wire and Wire Goods.</i>	
Broilers—	
Kilbourne Mfg. Co.	75@20%
Wire Goods Co.	75@
Buckets, Galvanized —	
Mfr's List, price per gross.	
Quart.	40 12 11
Water, Reg.	26.85 29.50 33.50
Water, Hwy.	15.35 18.00 21.50
Fire, Rd. Btm.	32.00 31.65 38.65
Well	37.35 41.35 45.35
Bull Rings— See <i>Rings, Bull.</i>	
Butts—	
Brass—	
Wrought, High List, Oct. 26, 10@65%	
Cast Brass, Tiebout's.....	40@10@
Cast Iron—	
Fast Joint, Broad.....	40@10@70@5%
Fast Joint, Narrow.....	40@10@5@10@
Loose Joint.....	70@10@70@70@
Loose Pin.....	70@10@70@70@
Mayer's Hinges.....	70@70@70@65%
Parliament Butts.....	70@70@65%
Wrought Steel—	
Bright.	
Light Narrow, Light Reversible.....	70@70@
Reversible and Broad.....	70@65%
Light Joint, Narrow, Light Inside Blind, &c.	70@
Back Flaps, Table Chest.....	65@
Japanned.	
Light Narrow, Loose Pin.....	70@
Light Narrow, Ball Tip.....	60@5%
Broad.....	40@5%
Steeples Tipped.....	70%
Bell Tipped.....	70%

Cages, Bird—

Hendrys Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900, 30%
Hendrys Bronze: Series 700, 800, 30%
Hendrys Enamelled, 35%

Calipers—See **Compasses**.
Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb., \$3.50@3.85
Sharp, 1 prong, per 100 lb., \$3.50@4.35
Burke's, 1 prg, Blunt Toe, 3½¢; 2 prg, Blunt Toe, 4½¢; 1 prg, Sharp Toe, 4½¢; 2 prg, Sharp, 4½¢; Blunt Heel, 4½¢; Sharp Heel, 4½¢
Lautier, Blunt, 4½¢; Sharp, 4½¢
Perkins, Blunt, 1 lb., 3.65¢; Sharp, 4.15¢

Can Openers—See **Opener, Can**.**Caps, Percussion—**

Eley's E. B. 52@55¢
G. D. per M 3½@15¢
F. L. per M 40@12¢
G. E. per M 48@50¢
Musket per M 62@63¢

Primers—

Berdan Primers, \$2 per M. 20¢@7%
Primer Shells and Bullets, 15¢@10%
All other primers per M. \$1.52@1.60

Carpet Stretchers—See **Stretchers, Carpet**.**Cartridges—**

Blank Cartridges:
32 C. F., \$5.50 10¢@5%
38 C. F., \$7.00 10¢@5%
22 cal. Rim, \$1.50 10¢@5%
32 cal. Rim, \$2.75 10¢@5%
B. B. Caps, Con. Ball, Swyd, \$1.90
B. B. Caps, Round Ball \$1.90
Central Fire 25¢
Target and Sporting Rifle, 15¢@10%
Primed Shells and Bullets, 15¢@10%
Rim Fire, Sporting 50¢
Rim Fire, Military 15¢@5%

Casters—

Bed 65¢@10@70%
Plate 60@65@75%
Philadelphia 70¢@10@75%
Acme, Ball Bearing 35¢
Gem (Roller Bearing) 70@10@15%
Steel Gem (Roller Bearing) 70¢
Standard Ball Bearing 45¢
Yale (Double Wheel) low list 40@10%

Cattle Leaders—See **Leaders, Cattle**.**Chain, Proof Coil—**

American Coil, Straight Link:
3-16 1/4 5-16 1/8 3 1/2 5/8
\$7.70 5.10 4.15 3.50 3.30 3.10
3 1/8-1 1/8 to 1 1/4 inch.
\$3.00 3.10

In case lots, deduct 25¢.

German Coil 70¢@10@70%

German Pattern Coil:
6-0 to 1 70¢@10@5%
2 and 3 60¢@10@10@70%
4, 5 and 6 50¢@10@5@10%
Halter—

Halter Chains 60¢@10@60@10%

German Pattern Halter Chains,
list July 24, '97 60¢@10@5@70%Covert Mfg. Co.:
Halter 35¢@5%**Cow Ties—**See **Halters and Ties**.**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.
6½-6-3, Straight, with ring, \$28.90
6½-6-2, Straight, with ring, \$29.90
6½-8-2, Straight, with ring, \$32.90
6½-10-2, Straight, with ring, \$37.90

NOTE.—Add 2¢ per pair for Hooks
Twist Traces: add per pair for Nos. 2
and 3, 20¢; No. 1, 3¢; No. 6, 4¢ to price of
Straight Link.

Eastern Standard Traces, Wag-
on Chain, &c. 60@10@60@10@5%

Miscellaneous—

Jack Chain, list July 10, '93:

Iron 60@10@5@60@10@10%

Brass 65¢@5%

Safety and Plumbers' Chain, 7½¢
Gal. Pump Chain 1½@2½%

Bridgeport Chain Co.:
Triumph Halter and Coil, 35¢@2½@40%
Triumph Dog 50@10@60%
Brown Halter and Coil 45@50@55%

Covert Mfg. Co.:

Breast, Halter, Heel, Rein, 40%

Oneida Community:

American Halter, Dog and Kennel

Chains 35¢@2½@40%

Niagara Dog Leads and Kennel

Chains 45@50@55%

Wire Goods Co.:

Dog Chain 70%

Universal Dbl-Jointed Chain 70%

Chain and Ribbon, Sash—

Oneida Community: 60%

Pullman:

Bronze Chain, 60%; Steel Chain,

Coppered 60@10%

Sash Chain Attachments, per set, 8¢

Aluminoy Sash Ribbon, per 100

ft. 2.00@3.00

Sash Ribbon Attachments, per set, 8¢

Chalk—

Carpenters' Blue gro. 50¢

Carpenters' Red gro. 50¢

Carpenters' White gro. 40¢

Checks, Door—

Bardsley's 45%

Pullman, per gro. 55¢@60%

Russwin 33¢@5%

Chests, Tool—

American Tool Chest Co.:

Boys' Chests, with Tools 55%

Youths' Chests, with Tools 40%

Gentlemen's Chests, with Tools 30%

Farmers', Carpenters, etc., Chests,
with Tools 20%

Machinists' and Pipe Fitters'
Chests, Empty 45%

Tool Cabinets 45%

C. E. Jennings & Co.'s Machinists'
Tool Chests 7½%

Chisels—

Socket Framing and Firmer

Standard List 80¢@10@10@10%

BUCK Bros. 30%

C. E. Jennings & Co.:

Socket Firmer No. 10 25¢@1½%

Socket Framing No. 15 25¢@1½%

Swan's 66¢@10@70%

L. & I. J. White & Co. 30@30@5%

Tanged—

Tanged Firmers 30¢@5@35%

BUCK Bros. 30%

C. E. Jennings & Co. Nos. 191, 181 25%

L. & I. J. White Co. 25@5%

Cold—

Cold Chisels, good quality, 13@15¢

Cold Chisels, fair quality, 11@12¢

Cold Cl. sets, ordinary 9@10¢

Elmore Tool Mfg. Co.:

Cold Chisels 50¢@5%

Chucks—

Almond Drill Chucks 35%

Almond Turret Six-Tool Chuck 40%

Beach Pat, each \$8.00 35¢@5%

Empire 25%

Blacksmiths' 25%

Jacobs' Drill Chucks 35¢@5%

Pratt's Positive Drive 25%

Skinner Lathe Chucks:

Independent 35%

Universal, Reversible Jaws 35%

Universal, Com. Style Jaws 40%

Combination, Reversible Jaws 35%

Combination, Com. Style Jaws 40%

Round Body or Box Body, 2 Chuck

Jaws 25%

Geared Scroll Chucks 25%

Drill Chucks:

New Model, 25%; Geared Pat-

tern, 25%; Skinner Patent, 25%

Positive Drive 40%

Planer Chucks 20%

Standard 45%

Drill Press Vises 30%

Face Plate Jaws 35%

Standard Tool Co.:

Improved Drill Chuck 45%

Union Mfg. Co.:

Combination Nos. 1, 2, 3, 4, 5, 6 35%

7, 8 and 17, 40%; No. 21 35%

Scroll Combinations, Nos. 83 and 84 30%

Geared Scroll, Nos. 33, 34 and 35 25%

Independent Iron, Nos. 18 and 318 35%

Independent Steel, No. 64 25%

Union Drill Nos. 000, 00, 100, 101, 102, 103, 104 25%

Union Czar Drill 25%

Universal, 11, 12, 16, 17, 13, 14, 15 40%

Universal No. 42 35%

Iron Face Plate Jaws, Nos. 28, 30, 48 and 50 35%

Steel Face Plate Jaws, Nos. 70 and 72 30%

Westcott Patent Chucks:

Lathe Chucks 50%

Little Giant Auxiliary Drill 50%

Little Giant Double Grip Drill 50%

Little Giant Drill, Improved 50%

Oneida Drill 50%

Scroll Combination Lathe 50%

Whitaker Mfg. Co.:

National Drill 25%

Clamps—

Carriage Makers' Star, P. S. & W. Co.:

Body, Parallel 35%@10%

Hammer & Co.:

Adjustable 20@5%

Carriage Makers' H. P. Screw 40@5%

Myers' Hay Rack 50%

Lineman's Swedish Neverturn 35%

Saw Clamps, see Vises, Saw Fliers'

Cleaners, Drain, Siphon—

Iwan's Champion, Adjustable 50%

Iwan's Champion, Stationary 40%

Sidewalk—

American Fork & Hoe Co.:

Star, P. doz. 40¢

Shank, P. doz. 53.50

Shank, X 7½, \$3.50; Shank, X 8 3.75

Cleavers, Butchers'—

Foster Bros. 30%

Fayette R. Plumb. 30%

L. & I. J. White Co. 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:

1902 Chicago Horse, each \$10.75

20th Century Horse, each \$5.00

Lightning Belt Horse, each \$15.00

Chicago Belt Horse, each \$20.00

Stewart's Enclosed Gear Roll

Bearing Horse, each \$6.75

Stewart's New Model Sheep

Shearing Machine, each \$12.75

Stewart Enclosed Gear Shearing Machine, No. 8, each \$9.75

Clips, Axle—

Regular Styles, list July 1, '05.

80¢@80@10%

Cloth and Netting, wire—

—See Wire, do.

Cocks, Brass—

Hardcore list:

Plain Bibbs, Globe, Kerosene,

Racking, Liquor, Bottling, &c.

dc 75%

Compression Bibbs 70%

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list 40%

Leather, Walter B. Stevens & Son's list 40%

P. S. & W. Co. 40%

Ideal \$4@40%&5%

Hales 60@5%

Little Giant P. doz. 40@50%

Nos. 305, 310, 312, 320, 322 35.50

\$35.00 \$48.00 \$44.00 \$72.00 \$68.00

New Triumph No. 605, P. doz. \$24.00,

40%

Compases, Dividers, &c.—

Ordinary Goods 70@10@75%

Conductor Pipe,—

L. C. L. to Dealers:

Gal. Steel, Charcoal, Copper.

Northeastern 50@10% 50@10%

Eastern 50@10% 50@10%

Central 50@10% 50@10%

Northwestern 50@10% 50@10%

Western 50@10% 50@10%

D. C. to 25¢ cash 10 days. Factory

shipments generally delivered.

See also Eave Troughs.

Crosses, Sash and Kraut—

Henry Diston & Sons:

Sash and Kraut Cutters 35%

Corn Graters 30%

J. M. Mast Mfg. Co.:</

10-lb. cans,
10 in. case... \$1.40 7¢ 6¢
10-lb. cans, less
than 10... 10¢ 10¢ 8¢
Less quantity... 10¢ 10¢ 8¢
NOTE.—In lots 1 to 3 tons a discount of
10% is given.

Extensions, Bit—

Ford's Auger Bit Extensions... 10¢ & 15¢
Ext. actors, Lemon Juice—
—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's Jap'd and Galv., 50 &
5%; Bronze and Plated... 50¢
Walling's... 50¢
Upson's Patent... 40¢

Cord and Weight—

Ives, # gro. \$1.08... 10¢
Titan, # gro. \$0.66... 10¢

Corrugated—

Acme Corrugated Fasteners... 70¢

Faucets—

Cork Lined... 50¢ & 10¢ & 60¢
Metallic Key, Leather Lined... 60¢ & 10¢ & 70¢

Red Cedar... 40¢ & @ 40¢ & 10¢ & 5¢
Petroleum... 70¢ & 10¢ & 75¢

B. & L. B. Co.:
Metal Key... 60¢ & 10¢

Star

West Lock... 50¢ & 10¢

John Sommer's Peerless Tin Key... 40¢

John Sommer's Boss Tin Key... 50¢

John Sommer's Victor Mtl. Key... 50¢ & 10¢

John Sommer's Duplex Metal Key... 60¢

John Sommer's Diamond Lock... 40¢

John Sommer's I.X.L. Cork Lined... 50¢

John Sommer's Reliable Cork Lined... 50¢ & 10¢

John Sommer's Chicago Cork Lined... 60¢

John Sommer's O. K. Cork Lined... 50¢

John Sommer's No Brand, Cedar... 50¢

John Sommer's Perfection, Cedar... 40¢

Self Measuring:

Enterprise, Self Measuring and

Pump, # doz. \$36.00... 40¢ & 10¢

Lane's, # doz. \$36.00... 40¢ & 10¢

National Measuring, # doz. \$36.40 & 10¢

Fellow Plates—

See *Plates, Fellow.*

Files—Domestic—

List Nov. 1, 1899.

Best Brands... 70¢ & 10¢ & 75¢ & 10¢

Standard Brands... 75¢ & 10¢ & 80¢

Lower Grade... 75¢ & 10¢ & 10¢ & 10¢

Gold Medal... 70¢

McCaffrey's American Standard... 60¢ & 10¢ & 10¢

Imported—

Stubs' Tapers, Stubs' list, July 24, '97... 33 1/3 @ 40¢

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103; Special, No. 104... \$3.75

Fusible Links, No. 96... 50¢

Expansion Bolts, No. 107... 60¢ & 10¢

Grindstone—

Net Prices:

Inch... 15 17 19 21

Per doz... \$3.60 3.85 4.15 4.65

Peck, Stow & Wilcox Co.:

Inch... 15 17 19 21 24

\$1.00 4.40 4.75 5.50 6.50... 30%

Reading Hardware Co.... 60%

Fodder Squeezers—

See *Compressors.*

Forks—

American Fork & Hoe Co.:

Iowa Dig-Ezy Potato... 70¢ & 5¢

Hay, Regular, 3-time... 45¢ & 20¢ & 12¢

Hay, Regular, 4-time... 60¢ & 71/2¢

Champion, Hay... 61¢ & 12¢

Acme, Hay... 61¢ & 20¢

Manure, Regular, 4-time... 65¢ & 5¢

Manure, Regular, 5 and 6 time... 71

Champion, Manure... 65¢ & 5¢

Columbia, Manure... 70¢

Acme, 4-time... 60¢ & 10¢

Round Shoulder Header, 4-time... 65

Champion, Header... 65¢

Dakota, Header... 65¢

Kansas, Header... 65¢

Wood, Barley... 65¢ & 5¢

Steel, Barley... 65¢ & 5¢

Columbia, Spading... 70¢ & 71/2¢

Frames—Wood Saw—

White, 8'g't Bar, per doz. 75 @ 80¢

Red, 8'g't Bar, per doz. \$1.00 @ 1.25

Red, Dbl. Brace, per doz. \$1.40 @ 1.50

Freezers, Ice Cream—

Qt. 1 2 3 4 6

Each... \$1.25 \$1.60 \$1.90 \$2.20 \$2.80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See Pans, Fry.**Fuse—Per 1000 Feet.**

Hemp... \$2.75... 20¢

Cotton... \$2.20... 20¢

Waterproof Sol. Taped... 3.65... 10¢ & 21/2¢

Waterproof Dbl. Taped... 4.40... 10¢ & 21/2¢

Waterproof Tpl. Taped... 5.15... 10¢ & 21/2¢

Gates, Molasses and Oil—

Stebbins' Pattern... 80 @ 80¢ & 5¢

Gauges—

Marking, Mortise, &c... 50 @ 50¢ & 10¢

Chapin-Stephens Co.:

Marking, Mortise, &c... 50 & 50¢ & 10¢

Diaston's Marking, Mortise, &c. 67 1/2¢

Wire, Brown & Sharpe's... 33 1/2¢

Wire, Morse's... 25¢

Wire, P. S. & W. Co. 33 1/2¢

Gimlets—Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, \$2.00; 2, \$2.30
Spike, Metal, No. 1, \$1.00; 2, \$1.30
Nail, Wood Handled, No. 1,
\$2.30; 2, \$2.60
Spike, Wood Handled, No. 1,
\$4.30; 2, \$5.60

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co. 65 @ 65 & 10¢

Glue, Liquid Fish—

Bottles or Cans, with Brush,
25¢ & 10¢ @ 50¢

Elwell's... 40¢

Grease, Axle—

Common Grade... gro. \$6.00 @ \$6.50

Dixon's Everlasting, 10-lb. pails, ea.
85¢; in boxes, # doz., 1 lb., \$1.20;

2 lb., \$2.00

Heimer Hard Oil... 25¢

Griddles, Soapstone—

Pike Mfg. Co. 33 1/2¢ & 33 1/2¢ & 10¢

Grinders—

Pike Mfg. Co.:

Hand and Foot Power, Pyko Nos.
1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power)... 33 1/2¢

Mower Knife and Tool, \$5.00. 40 & 10¢

Royal Mfg. Co.:

Alundum Grinding Machines, each,
Nos. 01, \$1.75; 1A, \$2.50; 10,
\$2.00... 30¢

Alundum Sickle Grinders, each,
Nos. 20, \$5.00; 20A, \$6.00; 20A,
Combined, \$6.50... 30¢

Alundum Disc Grinders, each,
\$2.50... 30¢

Grindstones—

Pike Mfg. Co.:

Improved Family Grindstones, #
inch, # doz. \$2.00... 23 1/2¢

Richards Mfg. Co., Eli and Cycle,
Ball Bearing, mounted... 40¢

Grips, Nipple—

Perfect Nipple Grips... 40 & 12¢ & 2¢

Halters and Ties—

Cow Ties... 65 @ 65 & 10¢

Bridgeport Chain Co.:

Triumph Coil and Halters, 35 & 21 1/2¢ & 40¢

Brown Coil and Halters, 45 & 50 & 55¢

Brown Cow Ties... 50 & 55 & 50 & 10 & 5¢

Brown Tie Outs... 70¢ & 10¢ & 75¢ & 5¢

Cover Mfg. Co.:

Web... 30 & 2¢

Jute Rope... 35¢

Sisal Rope... 20¢

Cotton Rope... 45¢

Hemp Rope... 45¢

Oneida Community:

Am. Coil and Halters... 40 & 40¢ & 5¢

Am. Cow Ties... 45 & 50¢

Niagara Coil and Halters... 45 & 50 & 5¢

Niagara Cow Ties... 45 & 50 & 10 & 5¢

Hammers—Handled Hammers—

Heller's Machinists'... 55 & 10 & 55 & 10 & 5¢

Heller's Farriers'... 40 & 5¢ & 40 & 5¢

Crucible Steel... 40 & 10 & 50¢

Farringers'... 40 & 10 & 50¢

Riveting... 40 & 10 & 50¢

Machinists'... 66 2/3¢ & 5¢

Blacksmiths'... 50¢

Fayatte R. Plumb:

A. E. Nail... 40 & 21 1/2¢ & 40 & 12 1/2¢

Eng. and B. S. Hand... 55 & 10 & 50 & 5¢

Machinists' Hammers... 60 & 10 & 5¢

Rivet and Timmers'... 40 & 7 1/2¢ & 40 & 12 1/2¢

Victor Magnetic Tack, # doz. \$7.75

Ives' Wood Track No. 1... \$2.25

Trolley B. D. No. 29... 50¢ & 10¢

Trolley B. D. No. 24... \$1.30; No. 27, \$1.40; No. 28, \$1.30; No. 31, \$1.60

Roller Bearings, No. 37... \$8.38; 39,...

41, 43, 44, Sizes 1 and 2, 70¢ & 12 1/2¢

Anti-friction, No. 42; No. 44,...

sizes 2 1/2 and 3,... 60¢

Hinged Tandem No. 48... 60 & 5¢

Folding Door B. B. Swivel No. 135... 40¢

Taylor & Boggs Fy Co.'s Kidder's Roller Bearing, # doz., 4 in., \$12.00; 5 in., \$14.00; 40 & 10¢

Myers' Stayton Hangers... 60¢

Atkins'... 40¢

Champion... 50¢

Dissston's... 50¢

Mechanics' Tool Handles—

Auger, assorted... gro. \$1.30 @ \$1.40

Brad Axl... gro. \$1.65 @ \$1.75

Chisel Handles, Ass'd, per gro.:

Tanged Firmer, Apple, \$4.00

\$2.65; Hickory... \$2.15 @ 2.40

Socket Firming, Apple, \$1.75

\$1.95; Hickory... 1.60 @ 1.75

Socket Framing, Hickory... \$1.60 @ \$1.75

File, assorted... gro. \$1.30 @ \$1.40

Hammer, Hatchet, &c... 60 & 10 @ 60 & 10 & 5¢

Hand Saw, Varnished, 80¢

85¢; Not Varnished... 65 @ 75¢

Plane Handles:

Jack, doz. 80¢; Fore, doz. 45¢

Chapin-Stephens Co.:

Carving Tool... 30 & 30 & 10¢

Chisel... 60 & 60 & 10¢

File and whl... 60 & 60 & 10¢

Saw and Plane... 30 & 30 & 10¢

Screw Driver... 30 & 30 & 10¢

Millers Falls Adj. and Batchet Anger Handles... 15 & 10¢

Nicholson Simplicity File Handle... \$1.00 @ \$1.10

J. L. Osgood:

Indestructible File and Tool, #

No. 1, \$8.00; No. 2, \$8.50;

No. 3, \$9.00; No. 4, \$9.50; No. 5, \$10.00... gro

Hoes—Eye—	Jointers—	Sash, &c.—	Hot Pressed:
Scovil and Oval Pattern, 60&10@60&10&10%	Pike Mfg. Co., Saw Jointers, \$7.00-40%	Ives' Patent: Crescent 10% Automatic Gravity Metal Sash, P gro. \$14.58 10% Window Ventilating 10% Pullman Patent Ventilating Lock, 25%	Off list. Square 5.80¢ Hexagon 6.30¢
Grub, list Feb. 23, 1899, 70&10@70&10&10%	Kettles—	Reading Sash Locks, 49% Taylor Mfg. Co., Perfect Ventilating, P doz. \$0.75@\$1.00	
D. & H. Scovil, 27% Am. Fork & Hoe Co. (Scovil Pattern) 60&5%	Brass, Spun, Plain 20@25% Enamelled and Cast Iron—See Ware, Hollow.		
Handled—	Knives—	Machines—Boring—	Oakum—
Cronk's Weeding No. 1, \$2.00; No. 2, \$2.50 Star Double Bit, \$2.50	Foster Bros.' Butcher, &c. 30% Wilkinson Shear & Cutlery Co. 60%	Com. Up't, without Augers, \$2.00@2.25 Com. Angl'r, without Augers, \$2.25@2.50	Best lb. 6½¢ U. S. Navy lb. 6 6¢ Navy lb. 5 6¢ Plumber's Spun Oakum 2½@3¢
American Fork & Hoe Co.: Regular, Cotton, 75@10@5&2½% Crescent, Cultivator, 75&2½%	Corn—	Ford Auger Bit Co. \$22.00 Jennings, Nos. 1 and 4, 25&1½% Easy Cut, P doz., No. 10 C H. \$2.10 Easy Cut, P doz., No. 10 B C H. \$2.00 Acme, P doz. \$2.35 Dent, P doz. \$2.35 Adjustable, Serrated, P doz. \$1.90 Serrated, P doz. \$1.85 Yankee, No. 1 C H. \$1.35 Yankee, No. 2 C H. \$1.15	Oil— Pike Mfg. Co., Stonoil, 40%
Sprouting, 50% Tobacco, Harper's, 65&15@10% Warren, 55@10@10@5% Ivanhoe, 65@15@10% Cultivator, B B 6, 70@10@10@5% Cultivator, B B 6½, 70@10@10@5% Weeding, Acme, 72½@10@2½% Scume, Lightning, 60&5%	Butcher, Kitchen, &c.—	Reading Sash Locks, 49% Taylor Mfg. Co., Perfect Ventilating, P doz. \$0.75@\$1.00	Oil Tanks—See Tanks, Oil.
Hoisting Apparatus— See <i>Machines, Hoisting.</i>	Knives—	Corking—	Oilers—
Holders—Bit—	Butcher, Kitchen, &c.—	Reisinger Invincible Hand Power, P doz. \$18.00	Steel, Copper Plated, 75@10% Chase or Paragon: Brass and Copper, 50@10% Zinc, 65@10@70% Railroad, 60@10@10% Malleable Hammers Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50% American Tube & Stamping Co.: Spring Bottom Cans, 70@70@10% Railroad Oilers, &c., 60@60@10% Maple City Mfg. Co.: Spring Bottom Cans, 70@70@10% Railroad Oilers, &c., 60@60@10% Openers—Packing Box—
Angular, P doz. \$2.00, 45&10%	Corn—	Ice Cutting—	Herculever, P doz. \$24, 30%
Door—	Corn—	Chandler's, 12½% Hoisting—	Can Openers—
Bardsley's, Iron, 40%; Brass and Bronze, 25% Empire, 50% Pullman, 25% Richards Mfg. Co.: No. 117, Ever- ready, 40%; Nos. 118, 119, Sure Grip, 50% Superior, 35% File and Tool—	Columbian Cutlery Co., Wilcut Brand Knives and Hooks, 60% American Fork & Hoe Co.: Easy Cut, P doz., No. 10 C H. \$2.10 Easy Cut, P doz., No. 10 B C H. \$2.00 Acme, P doz. \$2.35 Dent, P doz. \$2.35 Adjustable, Serrated, P doz. \$1.90 Serrated, P doz. \$1.85 Yankee, No. 1 C H. \$1.35 Yankee, No. 2 C H. \$1.15	Hoisting—	Per doz. Sprague, Iron Handle , 30@35¢ Sprague, Wood Handle , 40¢ Sardine Scissors , \$1.75@3.00 Can and Bottle Openers, P doz., net: Yankee, \$0.75@\$0.85; Little Gem, \$0.50@\$0.65; Nifty, \$0.75
Fruit Jar Holder—	Hay and Straw—	Washing—	Egg—
Triumph Fruit Jar Holder, P gross, \$18.00; P doz. \$2.00	Iwan's Sickle Edge, P doz. \$9.50 Iwan's Serrated, P doz. \$10.00	Boss Washing Machine Co.: Per doz. Boss, No. 1, \$5.00 Boss Rotary, \$5.00 Champion Rotary Baumer No. 1, \$5.00 Standard Champion No. 1, \$5.00 Standard Perfection, \$2.70 Cincinnati Square Western, \$3.00 Uneda American, Round, \$3.60	Hartigan Nickel Plate, P doz. \$2.00; Silver Plate, \$4.00
Trace and Rein—	Miscellaneous—	Mallets—	Packing—
Fernal Double Trace Holder, P doz., pairs, \$1.25	Farrars', doz. \$2.60@3.55 Westholm's, P doz. \$3.00@3.25	Hickory 45@50@50% Lignumvite 45@50@50% Tinners' Hickory and Apple- wood doz. 45@50@50%	Asbestos Packing, Wick and Rope, any quantity , 18@20¢
Hones—Razor—	Knobs—	Mangers, Stable—	Rubber—
Pike Mfg. Co., Belgian and Swaty, 50%; German, 33½%	Base, 2½-in. Birch or Maple, Rubber Tip, gro. \$1.25@1.50	Swett Iron Works, 50%	(Fair quality goods.)
Hooks—Cast Iron—	Carriage, Jap., Drive, all sizes, 25&7½% Door, Mineral, doz. 65@70¢ Door, Por. Jap'd, doz. 70@75¢ Door, Por. Nickel, doz. \$2.05@2.15	Mats, Door—	Sheet, C. I. , 11@12¢ Sheet, C. O. S. , 11@12¢ Sheet, C. B. S. , 12@13¢ Sheet, Pure Gum , 40@45¢ Sheet, Red , 40@50¢
Bird Cage, Reading, 40% Clothes Line, Reading List, 40% Coat and Hat, Reading, 45@20% Coat and Hat, Wrightsville, 60@5% Harness, Reading List, 40% Wire—	L & I. J. White, 20@25% Hay and Straw—	Enterprise Mfg. Co.:—	JENKINS , 36, P. B. S. 8¢, 25¢
Belt, Nos. 1 to 15, 75@10@80% Wire C. & H. Hooks, 80@80@10% Bradley Metal Clasp Wire, Coat and Hat, 75@10@80%; Ceiling, 75@10@80% Columbian Hdw. Co., Gem, 75@10@80% Parker Wire Goods Co., King, 75@10@80% Wire Goods Co.: Acme, 60@10%; Chief, 70@10%; Crown, 75%; Czar, 65@10%; V Brace, 75%; Czar Harness, 50%; Ceiling, 75% Wrought Iron—	Lacing, Leather—	Coffee, 20@25% Shell and Corn, 25@10% National list Jan. 1, 1902, 30% Parker's Columbia and Victoria, 33½% Parker's Box and Side, 50@10% Swift, Lane Bros. Co., 30%	Miscellaneous—
Box, 6 in., per doz., \$9.90; 8 in., \$1.15.	See <i>Beltting, Leather.</i>	Divine's Red Devil, 30% \$2.50, 3.50, 10.00, 15.00, 33½% No. 1, 3.50, 10.00, 15.00, 33½% Lippincott's: 1 2 3 4 No. 1, 2, 3, 4 \$2.50, 3.50, 10.00, 15.00, 33½% Pike Mfg. Co., Tool and Knife Grinding, 33½%	American Packing , lb. 70@10¢ Cotton Packing , lb. 70@125¢ Italian Packing , lb. 90@10¢ Jute , lb. 40@44¢ Russia Packing , lb. 90@10¢
Cotton, doz. \$1.25@1.50	Lamps,—	Mills, Coffee, &c.—	Pails, Water, Well, &c.—
Wrought Staples, Hooks, &c.— See Wrought Goods.	3-in. 35.75@4.00	Enterprise Mfg. Co.: Coffee, 20@25% Shell and Corn, 25@10% National list Jan. 1, 1902, 30% Parker's Columbia and Victoria, 33½% Parker's Box and Side, 50@10% Swift, Lane Bros. Co., 30%	See Buckets.
Miscellaneous—	Lanterns—Tubular—	Motors, Water—	Paint—
Hooks, Bench, see Steps, Bench, Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65	Regular, No. 0, ... doz. \$4.35@4.50	Divine's Red Devil, 30% \$2.50, 3.50, 10.00, 15.00, 33½% No. 1, 2, 3, 4 \$2.50, 3.50, 10.00, 15.00, 33½% Pike Mfg. Co., Tool and Knife Grinding, 33½%	Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; pack- ages of larger size, 20%
Brass, 60@60@10% Malleable Iron, 70@70@10% Covert Mfg. Co., Gate and Scuttle Hooks, 40% Turner & Stanton Co., Cup and Shoulder, 85@10% Bench Hooks—See Bench Stops. Corn Hooks—See Kives, Corn.	Side Lift, No. 0, ... doz. \$4.60@4.75	Mowers, Lawn—	Pans—Dripping—
Horse Nails—	Hinge Globe, No. 0, doz. \$4.60@4.75	NOTE—Net prices are generally quoted Cheapest, 10-in., \$2.00; advance 10¢ for each size. Cheap, 10-in., \$2.25; advance 15@ 20¢ for each size. Better Grade, 10-in., \$3.00; ad- vance 25¢ for each size.	Standard List , 75% Edwards, Royal Blue, 75%
See Nails, Horse.	Other Styles, ... doz. 40@40@10%	12 14 16 18 in. High Grade, ... \$4.50 4.75 5.00 5.25	Fry—
Horseshoes—	Latches—Thumb—	Continental, 60% Great American, 70% Great American Ball B'r'g, new list 70% Quaker City, 70% Pennsylvania, Jr., Ball Bearing, 60% Pennsylvania Golf, 50@10@5% Pennsylvania Horse, 33½@5% Pennsylvania Pony, 40@5%	Common Lipped: Nos. 1, 2, 3, 4, 5 Per doz., \$0.75 0.85 0.95 1.15 1.30
See Shoes, Horses.	Roggyn's Latches, Jap'd, with Screws, ... doz. 35@40@40¢	Leaders, Cattle—	Refrigerator, Galva.—
Hose, Rubber—	Door—	Small, ... doz. 50¢; large, 60¢	Inch, 12 14 16 18 Per doz., \$1.75 2.25 2.80 3.15
Garden Hose, ¾-inch: Competition, ... ft. 60@64¢ 3-ply Guaranteed, ... ft. 8½@9¢ ½-ply Guaranteed, ... ft. 9½@12¢	Cronk & Carrier Mfg. Co., No. 101, P. S. & W., ... doz. 10@10% Reading, ... doz. 60%	Motors, Water—	Paper—Building Paper
Cotton Garden, ¾-in., coupled: Low Grade, ... ft. 8@9¢ Fair Quality, ... ft. 10@11¢	Lamps,—	Divine's Red Devil, 30% \$2.50, 3.50, 10.00, 15.00, 33½% No. 1, 2, 3, 4 \$2.50, 3.50, 10.00, 15.00, 33½% Pike Mfg. Co., Tool and Knife Grinding, 33½%	Asbestos; lb.
Irons—Sad—	Latches—Thumb—	Mowers, Lawn—	Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft., 2½¢ Roll Board or Building Felt, 3-32 and ½ in., 45 to 60 lb., per 100 sq. ft., 3½¢ Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in., 3¢
From 4 to 10, ... lb. 2½@2½@4¢ B. B. Sad Irons, ... lb. 3½@3½@4¢ Mrs. Potts', cents per set: Nos. 50, 55, 60, 65	Regular, ... ft. 10-in., 11-in., 12-in., 13-in., 14-in., 15-in., 16-in., 17-in., 18-in., 19-in., 20-in., 21-in., 22-in., 23-in., 24-in., 25-in., 26-in., 27-in., 28-in., 29-in., 30-in., 31-in., 32-in., 33-in., 34-in., 35-in., 36-in., 37-in., 38-in., 39-in., 40-in., 41-in., 42-in., 43-in., 44-in., 45-in., 46-in., 47-in., 48-in., 49-in., 50-in., 51-in., 52-in., 53-in., 54-in., 55-in., 56-in., 57-in., 58-in., 59-in., 60-in., 61-in., 62-in., 63-in., 64-in., 65-in., 66-in., 67-in., 68-in., 69-in., 70-in., 71-in., 72-in., 73-in., 74-in., 75-in., 76-in., 77-in., 78-in., 79-in., 80-in., 81-in., 82-in., 83-in., 84-in., 85-in., 86-in., 87-in., 88-in., 89-in., 90-in., 91-in., 92-in., 93-in., 94-in., 95-in., 96-in., 97-in., 98-in., 99-in., 100-in., 101-in., 102-in., 103-in., 104-in., 105-in., 106-in., 107-in., 108-in., 109-in., 110-in., 111-in., 112-in., 113-in., 114-in., 115-in., 116-in., 117-in., 118-in., 119-in., 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Livingston Nail Co.:
 Daisy 20 doz. \$1.00
 Little Star 20 doz. \$5.00
 Rocking Table 20 doz. \$6.20
 Reading Hardware Co.:
 Advance 20 doz. \$4.00
 Baldwin 20 doz. \$4.00
 Reading 72 20 doz. \$3.25
 Reading 78 20 doz. \$6.25

Orange—

Goodell Co., Success..... each \$20.00

Potato—Saratoga 20 doz. \$7.00
 White Mountain 20 doz. \$6.00**Picks and Mattocks—**

(List Jan., 1908.)

List 75¢&10%
 Cronk's Handled Garden Mattock, 20 doz. \$3.00 33¢&1%**Pinking Irons—**

See Irons, Pinking.

Pins, Escutcheon—Brass 50¢@50¢&10%
 Iron, list Nov. 11, '85. 60¢@60¢&10%**Pipe, Cast Iron Soil—**Standard, 2-6 in. 70¢&10%
 Extra Heavy, 2-6 in. 75¢@70¢&80%
 Fittings, Standard and Heavy, 80¢&10@85%**Pipe, Merchant—**Carloads to Consumers:
 Steel. Iron.
 Blk. Galv. Blk. Galv.
 % % % %
 1/8 and 1/4 in. 66 50 61 ..
 5/8 in. 68 54 66 52
 1/2 in. 70 58 68 56
 5/4 to 6 in. 74 64 72 62
 7 to 12 in. 71 56 69 54**Pipe, Vitrified Sewer—**Carload lots.
 Standard Pipe and Fittings, 3 to 21 in., f.o.b. factory:
 First-class 87%
 Second-class 90%**Pipe, Stove—**Per 100 joints,
 Edwards' Nested: C. L. L. C. L.
 5 in., Standard Blue.... \$6.25 \$7.25
 6 in., Standard Blue.... 6.75 7.75
 7 in., Standard Blue.... 7.75 8.75
 5 in., Royal Blue..... 7.00 8.00
 6 in., Royal Blue..... 7.50 8.50
 7 in., Royal Blue..... 8.50 9.50
 Wheeling Corrugating Co.'s Nested:
 5 in., Uniform Color. 35.90 \$6.90
 6 in., Uniform Color. 6.40 7.40
 7 in., Uniform Color. 7.40 8.40**Planes and Plane Irons—**Wood Planes—
 Bench, first qual. 30¢@30¢&10%
 Bench, second qual. 40¢@40¢&10%
 Molding 25¢@25¢&10%
 Chapin-Stephens Co.:
 Bench, First Quality 30¢
 Bench, Second Quality 40¢
 Molding and Miscellaneous 25¢
 Toy and German 30¢
 Union 60¢**Iron Planes -**Chaplin's Iron Planes 60¢
 Union 60¢
 Plane Irons—
 Wood Bench Plane Irons, list Dec. 12, '06 25¢
 Buck Bros. 30¢
 Chapin-Stephens Co. 25¢
 Union 50¢
 L. & I. J. White 20&5/25¢**Planters, Corn, Hand—**Kohler's Eclipse 20 doz. \$7.50
 Plates—Fellowe lb. 3¢@4¢
 Avery Stamping Co.:
 Standard Wrot, Steel Fellowe Plates in 100 lb. kegs, per 100 lb. 3/4-in. to 1 1/4-in., \$4.00 net; 1 1/4-in. to 2-in., inclusive, \$3.75 net.**Steel Pipe Hook—**

Never-Break 75¢&10%

Pliers and Nippers—Button Pliers 75¢@75¢&10¢
 Gas Burners, per doz., 5 in., \$1.25
 @ \$1.30; 6 in., \$1.45. 1.50

Gas pipe 32.00 32.25 32.75 33.50

Acme Nippers 50¢&5%

Cronk & Carrier Mfg. Co.:
 American Button 80¢

Improved Button 75¢@10%

Cronk's 60¢

No. 8 Linemen's 50¢

Stub's Pattern 45¢

Combination and others 35¢

Elmore Gas Pliers 70¢

Heller's Farriers' Nippers, Pincers and Tools 40¢@40¢&10¢&5%

P. S. & W. Timmers' Cutting Nippers 40¢

Swedish Side, End and Diagonal Cutting Pliers 50¢

Utica Drop Forge & Tool Co.:
 Pliers and Nippers, all kinds 40¢**Plumbs and Levels—**Chapin-Stephens Co.:
 Plumbs and Levels 30¢@30¢&10%

Chapin's Imp. Brass Cor. 40¢@40¢&10%

Pocket Levels 30¢@30¢&10%

Extension Sights 30¢@30¢&10%

Machinists' Levels 10¢@10¢&10%

Dinton's Plumb'g and Levels 30¢@10%

Dinton's Pocket Levels 30¢@10%

Stanley's Dulux 35¢

Woods' Extension 35¢@20%

Points, Glaziers'—
 Bulk and 1-lb. papers lb. 9¢
 1/2-lb. papers lb. 9¢
 1/4-lb. papers lb. 10¢

Police Goods—

Manufacturers' Lists 25¢@25¢&5%

Tower's 25¢

Polish—Metal, Etc—

Ladd Co.: Putzade Liquid, 20 gro. 1/2 pts. \$12.00; 1 pt. \$20.00; 1 qt. \$40.00; 20 doz. 1/2 gals. \$6.35; 1 gal. \$12.00.

Prestoline Liquid, No. 1 (1/2 pt.), 20 doz. \$3.00; No. 2 (1 qt.), \$9.00. 30¢

Prestoline Paste 30¢

George William Hoffman:

U. S. Metal Polish Paste, 3 oz. boxes, 20 doz. 50¢; 20 lb. boxes, 20 doz. \$1.25; 1 lb. boxes, 20 doz. \$2.25.

U. S. Liquid, 8 oz. cans, 20 doz. \$1.25.

Barkeepers' Friend Metal Polish, 20 doz. \$1.75.

Stove—

Black Eagle Benzine Paste, 5 lb. cans, 20 doz. 10¢

Black Eagle, Liquid, 1/2 pt. cans. 20 doz. 75¢

Black Jack Paste, 1/2 lb. cans, 20 doz. 9.00

Black Kid Paste, 5 lb. can, each. 20 doz. 65¢

Ladd's Black Beauty Liquid, per 100 tins. 6.75

Joseph Dixon, 20 gr. \$5.75. 10¢

Dixon's Plumbeago lb. 8¢

Fireside 20 gr. \$2.50. 10¢

Gem, 20 gr. \$4.50. 10¢

Japanese 20 gr. \$3.50. 10¢

Jet Black 20 gr. \$3.50. 10¢

Peerless Iron Enamel, 10 oz. cans, 20 doz. \$1.50

Window Polish—

Benj. P. Forbes:

Glasbright, No. 2, gal. pails, 20 doz. \$2.00; each, \$2.50; 1 lb. cans, each 75¢

Glasbright Powder, bbls., 20 doz. \$6.50

Poppers, Corn—

1 qt. Square doz. \$0.80; gro. \$8.75

1 qt. Round doz. \$0.90; gro. \$10.00

1/2 qt. Square doz. \$1.20; gro. \$12.00

2 qt. Square doz. \$1.50; gro. \$15.00

Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, &c.

Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢; 6 1/2 ft., 48¢; 7 ft., 50¢.

Steel Hitching Posts each \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enamelled 40¢

Tinned 30¢@10%

Powder—

Black Sporting:

Kegs (25 lb.) 55.00@5.50

Half Kegs (12 1/2 lb.) 82.75@3.00

Quarter Kegs (6 1/4 lb.) 81.50@1.65

Canisters, pounds 25

Canisters, 1/2 pounds 15

Canisters, 1/4 pounds 12

Discount to trade, 10%

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enamelled 40%

Tinned 30¢@10%

Powder—

Black Sporting:

Kegs (25 lb. bulk) \$6.50

Half Keg (12 1/2 lb. bulk) \$3.50

Quarter Keg (6 1/4 lb. bulk) \$1.30

Case 24 (1 lb. cans bulk) \$8.50

Half case (1 lb. cans bulk) \$1.50

King's Smokeyess: Shot Gun, Rifle, Keg (25 lb. bulk) \$12.00@15.00

Half Keg (12 1/2 lb. bulk) 6.25 7.75

Quarter Keg (6 1/4 lb. bulk) 3.25 4.00

Case 24 (1 lb. cans bulk) 14.00 17.00

Half case 12 (1 lb. c. bk.) 7.25 8.75

Presses—

Fruit, Wine and Jelly—

Enterprise Mfg. Co. 20¢@25%

Seal Presses—

Morrill's No. 1, 20 doz. \$20.00. 50%

Pruning Hooks and Shears—

See Shears.

Pullers, Nail, Etc.—

Cyclops 50%

Elmore Drop Forged Tack Pullers, 10 lb.

Miller's Falls, No. 3, 20 doz. \$12.00. 33¢@10%

Morrill's No. 1, Nail Puller, 20 doz. \$20.00. 50%

Pearson No. 1, Cyclone Spike Puller, each \$30.00. 50%

The Scranton Co., Case Lots:

No. 2B (large) \$5.50

No. 3B (small) \$5.00

Smith & Hemenway Co.:

Diamond B. 70¢

Staple Pullers, Utica and Davison 60¢

Taylor Mfg. Co., Sampson Tack, 20 doz. \$40.40

Pulleys, Single Wheel—

Inch 1 1/2 1 3/4 2 3

Awning or Tackle, doz. 50.50 45 60 1.05

Hay Fork, Swivel or Solid Eye, doz. 4 in., \$1.25; 5 in., \$1.55

Inch 2 1/2 2 1/4 2 1/2

Hot House, doz. 20.65 25 31 1.20

Inch 1 1/2 1 3/4 2 1/4 2

Screw, doz. 30.16 39 23 .30

Inch 1 1/2 1 3/4 2 1/4 2 1/2

Side, doz. 20.25 30 .55 .60

Inch 1 1/2 1 3/4 2 1/4 2 1/2

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1 1/4 and 2 in. 17@20¢

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1 1/4 and 2 in. 17@20¢

New Nicholson 70¢@10¢&75%

See also Files.

Rasp, Horse—

Dissert's 75¢

Heller Bros. 70¢@60¢@70¢@10¢&5%

Liveright Bros. Gold Medal. 70@10@75%

McCaffrey's American Standard 60@10¢&5%

New Nicholson 70@10@75%

See also Files.

Auger Mortise, no Face Plate, per doz., 1 1/4 and 2 in. 20@21¢

Acme, No. 35.13 in., 19¢; 2 in., 20¢@21¢

American Pulley Co.: Wrought Steel American Plain Axle 50¢@10%

Wrought Steel Eagle 17@20¢

Top Notch Electrically Welded Nos. 3 and 4 19¢

Common Sense 20¢@20¢

Fox-All-Steel, Nos. 3 and 7 in. 2 in. 20¢@20¢

Hendryx: M 6, Q 6, A 6, B 6, M 9, M 16, Q 16, A 16, B 16, 400B, Rubber, Populo Nickelated Populo 20¢

Aluminum, German Silv., Brouze, 25¢@20¢

3210 N. 124 N. 20¢

3004 N. 96 N. 6 RM. G 9 25¢@20¢

4 N. 6 PN. 24 N. 26 PN. 20¢

2904 P. 33 1/2 N. 2904 P. 33 1/2 N. 20¢@20¢

002904 PN. 33 1/2 N. 802 N. 33 1/2 N. 20¢@20¢

986 PN. 2904 N. 97 PN. 25¢@20¢

5009 PN. 20¢@20¢

Competitor, 102 P. 102 PN. 202 P. 20¢

202 PN. 102 PR. 202 PR. 20¢

\$84 P. 304 PN. 00304 P. 00304 PN. 33 1/2 N. 20¢@20¢

Registers—

List July 1, 1908.

Japanned, Electroplated and Bronzed 70¢

White Porcelain Enamel 50¢@10%

Solid Brass or Bronze Metal. 40¢

Revolvers—

Single Action 95¢@11¢

Double Action, except 44 cal. 82¢@2.00

Double Action, 44 caliber 82¢@2.00

Automatic 8¢@1.00

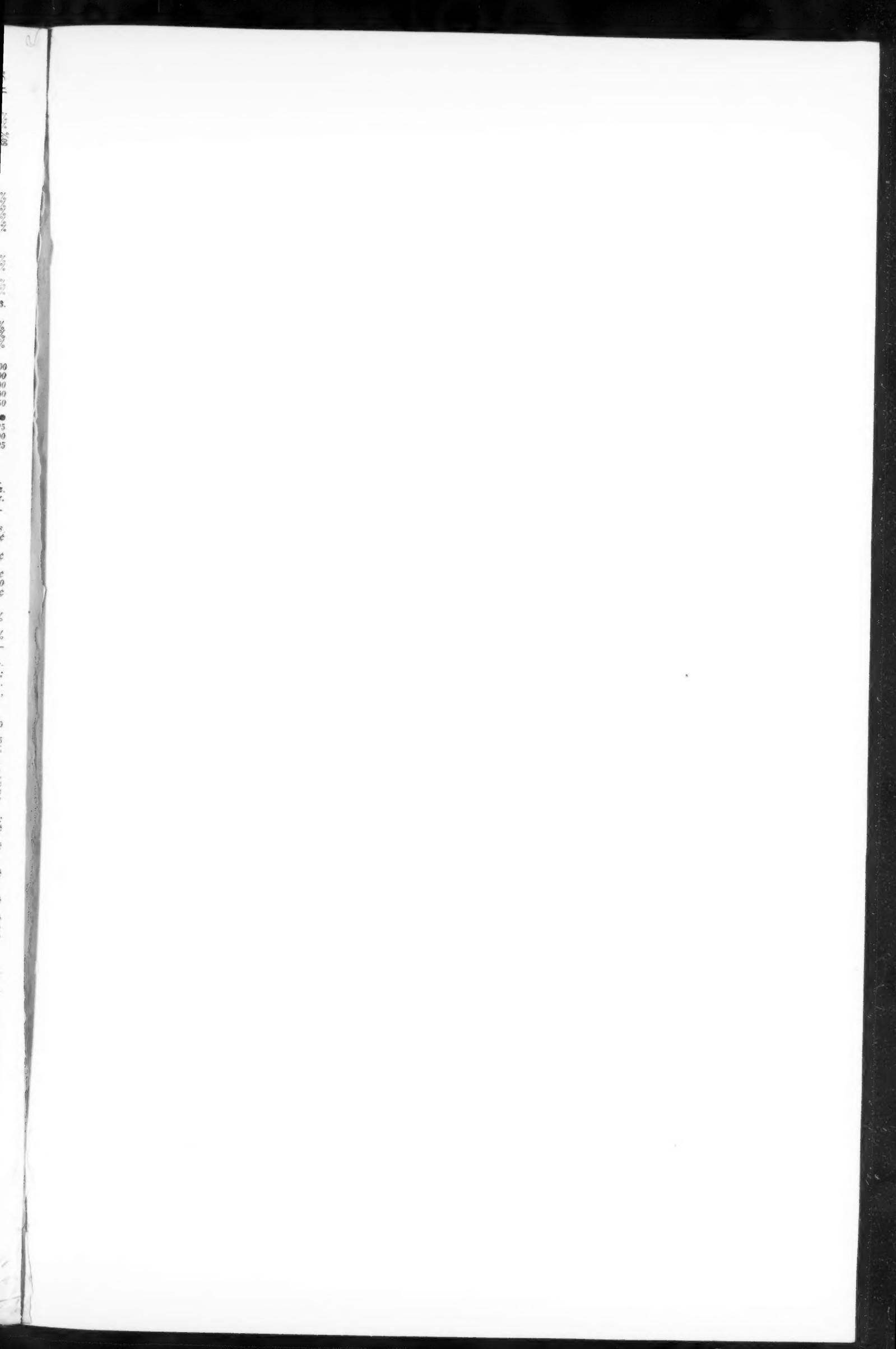
Hammerless 8¢@1.00

Riddles, Hardware Grade—

16 in. per doz. 32.50@32.75

17 in. per doz. 32.75@33.00

18 in. per doz. 33.00@33.25



VOLUME

TIGHTLY BOUND

BEST COPY

AVAILABLE